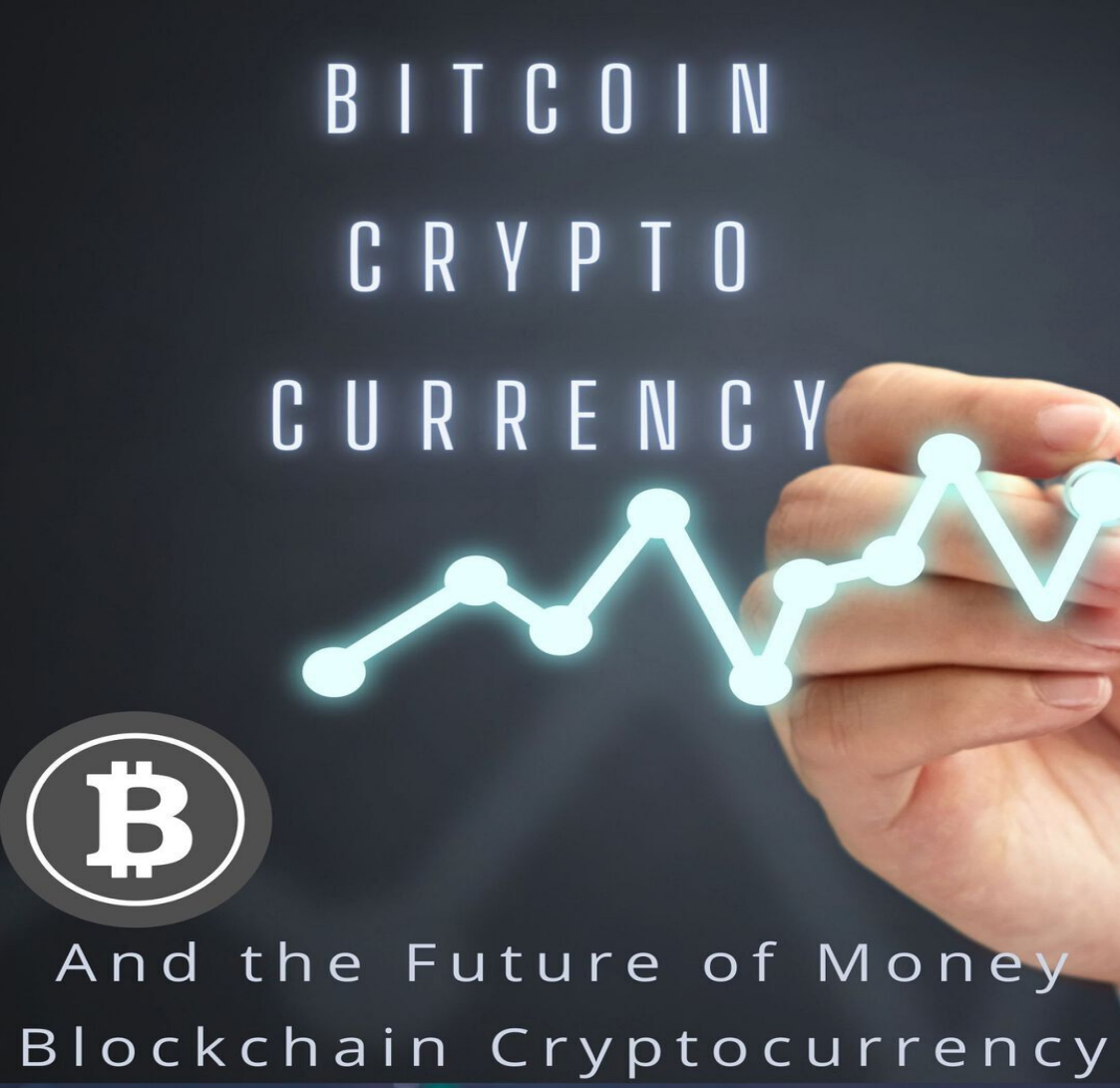
BITCOIN CRYPTO CURRENCY



And the Future of Money

Blockchain Cryptocurrency and the Future of Money

By Ewan B. Morris

VISIT…

BITCOIN CRYPT CURRENCY

and the Future of Money
Blockchain Cryptocurrency and
the Future of Money

Ewan B. Morris

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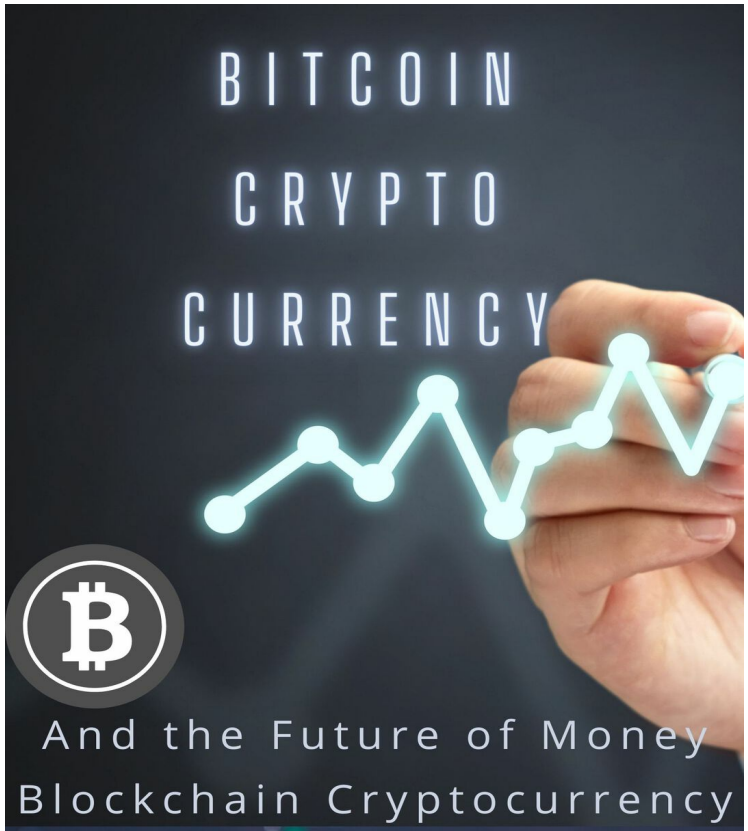

And the Future of Money

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Introduction

Today, millions of individual traders and investors around the world are discovering the thrills and challenges of forex trading.

You don't even have to be at your desk to trade these days; you can use a smartphone or other mobile device to trade on the fly.

Without a doubt, the forex market is one of the most volatile and fastest-moving financial markets to trade. In a period of seconds or minutes, money can be made or lost. At the same time, currencies can exhibit long-term trends that endure for days, weeks, or even years. Most importantly, forex markets are continually moving, offering a trading environment that is both accessible and target-rich.

In contrast to stock markets, which are more known and intuitive to most investors, the forex market appears to novices to be more elusive and convoluted.

We teach you how the forex market works, what moves it, and how you may actively trade it in this book. We also give you the tools you need to create a systematic trading

strategy without losing your shirt in the FX market. We go over the following topics:gaining a better understanding of the variables that cause currency changes

Understanding trading traditions and methods in the forex market

Using economic statistics and public statements to make sense of them

locating data and market intelligence sources

Market psychology, sentiment, and positioning are all factors to consider.

Identifying important characteristics of specific currency combinations

Technical analysis is used to identify trade opportunities.

Developing a systematic and disciplined approach to currency trading

Putting more emphasis on risk management to reduce losses and keep more of your gains

It's always risky to make assumptions, but understanding where we're coming from might help put your mind at ease. Obviously, not all of these assumptions will apply to you, but at the very least, we'll be upfront about it. We made the following assumptions when producing this book:

You've heard about forex trading and want to learn more about what it entails before diving in.

You're fascinated by the forex market's global dimensions and want to learn how to profit from currency fluctuations.

You want to hedge your investments or diversify your trading activity.

You're interested in learning more about technical analysis and how it can help you

improve your trading outcomes.

You are aware that trading currencies entails the risk of losing money.

You're willing to invest the time and resources required to fully comprehend what currency trading entails.

You have the financial means to engage in margin trading, which means you'll never put more money at danger than you can afford to lose without jeopardizing your lifestyle.

You're not gullible enough to believe the infomercials promising fast money through currency trading.

You are aware that there is a significant distinction between gambling and speculating.

Before you decide to become serious about forex trading, these assumptions should serve as a healthy reality check. It's a lot like being

a weekend golfer and being dissatisfied when your scores don't match those of the pros.

But why should it, when you think about it? It's their full-time job, so the pros are out there practicing and playing all day, every day. Most people can only hope to play a round on the weekend or spend a few hours at the driving range once a week. You'll be in a lot better position to benefit from actively trading if you keep your perspective on what's reasonable for you.

THE BASICS OF CURRENCY TRADING

When it comes to currency trading as a business,

Getting a feel of what influences currency movements

Creating trading methods to take advantage of chances

Putting the trading strategy into action

The forex market has erupted onto the scene and has quickly established itself as the

hottest new financial sector. It's been around for a long time, but developments in computerized trading have made it more accessible.

Individual traders now have access to it on a scale that was inconceivable just a few years ago.

We've spent our whole professional careers in the forex market, and we can't conceive of a more favorable trading environment. Nothing, in our opinion, compares to the forex market's pace and thrill, as well as the intellectual and psychological demands of trading in it. We've always thought of our job as essentially doing the same thing every day, but in the FX market, no two days are ever the same. There aren't many people that can claim that about their day jobs, and we wouldn't give it for anything in the world.

What Is Currency Trading and How Does It Work?

Currency trading is, at its most basic level, speculating on the value of one currency vs another. Speculating and currency are the important words in that last phrase. We believe that considering currency trading from those two perspectives — or two dimensions, if you will allow us to wax philosophical — is critical.

On the one hand, it's pure speculation, just like buying an individual stock or any other financial security in the hopes of making a profit. The securities you're speculating on, on the other hand, are the currencies of other countries. When taken independently, this means that currency trading is concerned with both the dynamics of market speculation, or trading, and the factors that influence currency value. When you combine them, you get the world's largest, most dynamic, and interesting financial market.

We will tackle currency trading from each of these perspectives throughout this book,

looking at them separately and combining them to offer you the information you need to trade in the forex market.

Speculation as a business

Taking financial risk in the hopes of making a profit is what speculating is all about. It isn't, however, gambling or investing. Gambling is defined as playing with money despite the fact that you are aware that the chances are stacked against you. Investing is all about reducing risk and maximizing return over a long period of time. Speculating, sometimes known as active trading, entails taking calculated financial risks in the hopes of achieving a successful return over a short period of time.

To be a good trader in any market, you must have the following skills.

Dedicatedness (in terms of both time and energy)

Obtaining Resources (technological and financial)

Discipline is a virtue (emotional and financial)

- Decisiveness

- Perseverance

- Knowledge

Even if you possess all of these characteristics, creating a complete trading strategy is essential (see Chapters 11, 12, and 13). You wouldn't start a business without first creating a business plan (at the very least).

We sincerely hope not!). So, if you don't create and keep to a realistic trading plan, you shouldn't expect to succeed in trading. Consider trading as if it were your own business, and approach it as such, because that is exactly what it is.

Above all, try not to get too worked up over your trading performance. Financial markets are prone to erratic fluctuations on a regular basis, and the market has no notion who you are or what trade idea you have.

Currencies as a means of exchange

If you've heard anything about the forex market, you've most likely heard that it's the world's largest financial market, at least in terms of daily trading volumes. To be true, the forex market is one-of-a-kind in many ways. Because the volumes are so large, liquidity is always available. It also works.

The market is open 24 hours a day, six days a week, offering merchants access to the market whenever they need it. (In Chapter 2, you'll get a feel of the forex market's size and how it works on a daily basis.) We'll look at who the key forex players are in Chapter 3.)

There are little trading constraints - no daily trading limits, no position size restrictions,

and no prerequisites for selling a currency pair short. (In Chapter 4, we go over all of the mechanics and conventions of currency trading.)

When you sell a currency pair short, you're anticipating a price drop. Going short is just as prevalent as going long because of the way currencies are quoted and because currency rates fluctuate all the time.

The majority of trading occurs in the major currency pairs, which pit the US dollar (USD) against the currencies of the Eurozone (European countries that have accepted the euro), Japan, the United Kingdom, and Switzerland.

The minor pairs, in which the US dollar is traded against the Canadian, Australian, and New Zealand dollars, also offer lots of trading opportunities. There's also cross-currency trading, which sets two non-USD currencies against one another, such as the Swiss franc versus the Japanese yen. There

are perhaps between 15 and 20 of them in all.

Depending on the forex brokerage you use, you can trade a variety of significant currency pairings. (For a look at the fundamental and market factors that affect the most widely traded currency pairings, see)

Most individual traders use a brokerage business to trade currencies over the Internet, on a PC, tablet, or even smartphone. The majority of online currency trading is done on a margin basis, which allows individual traders to trade larger amounts by leveraging the amount of margin on deposit.

Trading with leverage is one of the most important aspects of the forex market. The leverage, or margin trading ratios, can be extremely high, up to 200:1 or higher, implying that a $1,000 margin deposit could control a position size of $100,000.

the sum of $200,000 (It's worth noting that margin rules differ each country.) All of your

trading will take place against the backdrop of margin trading. It has advantages, but it also has its own set of rules and standards. Because leverage is a two-edged sword that amplifies both gains and losses equally, risk management is critical to any successful trading strategy.

Make sure you're only risking money you can afford to lose before you start trading in any market. This is known as risk capital. Any good trading strategy relies on risk control. Margin trading can be a very short-lived enterprise without a risk-aware strategy. You have a far higher chance of surviving bad transactions and making winning ones if you have a proper risk plan in place. (Risk management is discussed throughout the book, but particularly in.)

The forex market is not affected by downturns in the same way that other financial markets are. In the forex market, selling a currency pair is common. This is

unlike other markets, such as stock markets, where regular investors rarely sell real equities because of the financial dangers. The FX market is relatively resilient to downturns due to the prevalence of selling.

Even in times of financial crisis, you swap one currency against another, so something is constantly going up. (In Chapter 2, we go over risk on and risk off in more detail, as well as what this means for currencies.)

What Influences Currency Exchange Rates?

In a nutshell, information. Every financial market is driven by information, but the FX market has its own set of information inputs. At any given time, many different cross-currents are at work in the currency market. After all, the forex market determines the value of one currency in relation to another, so you're looking at two big worldwide economies at the very least. When you add in a half-dozen or more other national economies, you've got a lot of data coming

through the market.

The currency market is driven by fundamentals.

The macroeconomic and political fortunes of the countries whose currencies are traded are reflected in fundamentals, which is a broad grouping of news and information. (In Chapters 7 and 9, we go over those inputs in greater detail.) When you hear someone talk about the fundamentals of a currency, she's usually talking about economic fundamentals. The following are the economic fundamentals:

Reports on economic data

Levels of interest rates

Monetary policy is a term used to describe how a country's money is

Flows of international trade

Flows of international capital

Political and geopolitical fundamentals are also important. The market's faith or confidence in the currency's value is an important component of the currency's value. If political events such as an election, a conflict, or a scandal are perceived to be undermining trust in a country's leadership, the currency's value may suffer.

Gathering and evaluating all of this data is part of a currency trader's daily routine, which is one of the reasons we put dedication at the top of our list of successful trader characteristics (see "Speculating as an Enterprise,").

Unless the currency market is being driven by

technicals.

Technical analysis is a type of market analysis that typically includes chart analysis, trend-line analysis, and mathematical studies of price behavior, such as momentum or moving averages, to name a few examples.

There aren't many currency traders we know that don't use technical analysis in their trading. Even the typical fly-by-the-seat-of-your-pants, trade-by-gut traders are likely to be aware of technical price levels established by others. If you've traded in other financial markets, there's a good chance you've used technical analysis or at least heard of it.

If you're not familiar with technical analysis but wish to trade actively, we strongly advise you to learn some of the fundamentals (see Chapter 10). Don't let the name scare you away. Technical analysis is similar to an electric saw in that you don't need to understand the circuitry to utilize it. However, in order to avoid harm, you must

know how to operate it properly.

Because of the large volume of fundamental data that hits the market at any given time, technical analysis is extremely significant in the FX market.

Currency traders use technical analysis to establish and update their trading strategies on a regular basis, with many people trading only on technical indicators. (For more information on how traders actually use technicals.)

It could also be something else.

We're not attempting to be amusing. Honest. What we're attempting to convey is the concept of the numerous cross-currents that exist in the currency market at any one time. We mentioned earlier in this chapter that currency trading is a risky business.

Speculative trading is merely one type of market speculation, and it involves a market dynamic (see “What Is Currency Trading?”

earlier in this chapter).

Trader's instinct, market psychology, mood, position adjustment, or more buyers than sellers – whatever you choose to call it. The reality is that the forex market is made up of hundreds of thousands of traders, each with a unique perspective on the market and expressing their opinions by buying and selling various currencies at various periods and price levels.

That is to say, in addition to learning currency-specific fundamentals and becoming familiar with technical analysis, you must also have a grasp of market dynamics (see Chapter 8). That's where trading with a strategy comes into play (see the following section).

Creating a Trading Strategy

If your inbox is anything like ours, you're

probably swamped with strange penny-stock advice or information about the next big Chinese stock IPO (IPO). (If you aren't, please send us the contents of your spam filter.

Those are the only occasions you'll receive a message instructing you on how to trade. You'll be on your own for the rest of the time. Isn't that, after all, what speculative trading is all about?

Please understand that we are not attempting to scare you away. We're only attempting to make it clear that you are the only one who understands your risk appetite and trading style. And it's possible that you haven't even decided on a trading style yet.

Identifying your trading personality

Before you can establish a trading strategy, you must first decide on a trading style. (For more information on trading styles, see Chapter 10.) Different trading styles

necessitate different trading plans, but there are a number of common trading guidelines that apply to all styles.

What exactly is a trading style? It all comes down to how you handle forex trading in terms of risk management.

Time frame for trading: How long will you keep a position open? Are you seeking for short-term trade opportunities (day trading), or are you hoping to catch larger swings in currency values over days or weeks, or are you looking for anything in between?

Currency pair selection: Do you want to trade in all of the different currency pairings, or do you want to focus on just one or two?

Trade rationale: Do you want to trade fundamentally or technically? Are you thinking about developing a trading system? What strategy are you going to use? Are you a breakout trader or a trend follower?

Risk appetite: How much are you willing to risk and what are your expectations for a return?

We don't expect you to know the answers to any or all of them, and that's just the point. We hope that while you read this book, you will consider what trading style you want to pursue. Practice accounts, often known as demo accounts, allow you to experiment with different styles and methods. (For more information on how to use practice accounts effectively, see Chapter 2.)

At the end of the day, though, deciding on a trading technique that you are comfortable with and can follow on a regular basis is beneficial. The essential variables will be your own personal circumstances (job, family, spare time, finances, temperment, and discipline), and you'll be the only one who knows what they are.

Organizing the transaction

Whatever trading technique you eventually adopt, you won't get very far until you create and stick to a concrete trading plan (see Chapter 10). Trading plans avoid little, bad trades from becoming big, terrible trades and can turn tiny winnings into bigger winners. They're your road map, more than anything, for navigating the market once the adrenaline and emotions start pumping, no matter what the market throws at you.

We're not implying that currency trading is any less difficult than other forms of financial market speculation. However, we can assure you that trading using a strategy will considerably increase your prospects of long-term success in the forex market. Above all, we want to warn you that trading without a strategy is a definite way to lose money. You might get away with a few close calls, but any trader without a plan will face a day of reckoning – that's just how markets work.

Identifying a trading opportunity is the first step in every trading strategy (see Chapter 12). No one is going to call you or send you an email telling you what to trade and when. You must put up the effort and use your gray matter to identify legitimate trading chances.

We share our own observations on how the FX market behaves in various market scenarios throughout this book. Those insights, we believe, contain several kernels for finding trade chances. (In particular, we teach you a variety of actual strategies to look at the market in order to find trade opportunities in Chapter 12.) Above all, wait for the market to reveal its hand, which it always does, one way or another.

From start to finish, executing the trading strategy

The first stage in each trading is to enter the market and open a position. The initial step of your trading plan, how you enter your position, can be just as crucial as the trade

opportunity itself. (See Chapter 14 for more information about securing a position.) After all, the trade opportunity will never be realized if you never enter the position. And, as a trader, there's probably nothing more aggravating than spotting a profitable trading opportunity and then failing to act on it.

It went as planned, but you have nothing to show for it because you never placed the deal.

When you begin a trade, the time and resources you put into researching, monitoring, and analyzing the market pay off. Formulating a personal trading system with trigger points and setups to help you into the trade makes this process easier. Placing the transaction is only the first step.

Just because you have a trading strategy in place doesn't imply the market will follow it. You must be actively involved in managing your position in order to maximize the benefits if it is a winner and to limit the losses

if the market is not in your favor.

Active trade management is also necessary if you want to keep more of what you earn in a trade. Making money in the forex market, in our experience, is not always the most difficult part. Keeping what you've created is often the most difficult part.

While your transaction is still open, you must be alert and keep thinking about and monitoring the market. The market will constantly move, sometimes more quickly than others, and fresh information will continue to enter the market. We look at a few different strategies to monitor the market while your trade is active in Chapter 15, as well as how and when to alter your trading strategy based on events and time.

The final step in the process is to exit each transaction, and you'll either be thrilled with a profit or sad with a loss. Every deal results in a profit or a loss (unless you exit at the entering price); that's just how the market

works. You are still in control of your transaction while it is active, and you can opt to exit it at any time. We look at critical tactical aspects to keep in mind when it's time to close off the trade in.

Even after you've left the job, your work isn't finished. If you're serious about currency trading as a business, you should analyze your previous trades to see what they reveal about your overall trading style and transaction execution.

Keeping track of your trading history allows you to stay focused, learn from your failures, and avoid discipline lapses that could cost you money on your next deal.

Then comes the decision to move on to the next trading opportunity.

WHAT IS THE FOREIGN EXCHANGE MARKET

Getting started in the forex market

Recognizing that the name of the game is speculating

Buying and selling currencies all across the world

Creating a link between other financial markets and currencies

Using a practice account to get a feel for currency trading

It's what we call the "Big Kahuna" of financial markets. The foreign exchange market, sometimes known as the forex market or just the FX market, is a market where currencies are exchanged for one another.

The foreign exchange market is the world's largest and most liquid financial market. (For more on liquidity, see the section "Getting liquid without getting drenched" later in this chapter.)

The forex market serves as a crossroads for international capital, serving as a point of confluence for global commercial and investment flows. The creation of the forex markets was originally based on international trade movements, such as when a Swiss electronics business purchases Japanese-made components.

Global financial and investment flows, on the other hand, now account for the majority of nonspeculative currency market volume. It doesn't matter if it's a

Every cross-border transaction, whether it's an Australian pension fund investing in US Treasury bonds, a British insurer allocating assets to the Japanese equities market, or a German corporation purchasing a Canadian manufacturing plant, goes via the forex market at some point.

The forex market is the ultimate marketplace for dealers. It's a market that's open 24 hours a day, six days a week, allowing traders to react to breaking news and events. It's a market where multibillion-dollar trades may be performed in seconds and may not even change pricing. That's what makes FX so special: try buying or selling a half-billion dollars in another market and observe how prices react.

Electronic currency trading is on the rise.

Since the mid-1980s, the forex markets have featured a limited type of electronic trading. Reuters Dealing, an innovative communication system built by Reuters, was the principal way of electronic trading at the time. It was a closed-network, real-time chat system that existed long before the Internet.

In so-called direct dealing, the Reuters system allowed banks to contact each other electronically for pricing quotes. This technology worked in tandem with a global network of brokerage businesses known as voice brokers, who relied on telephone connections to currency trading desks and broadcast running price quotes.

In the early to mid-1990s, the contemporary type of electronic currency trading appeared in the forex market, eventually displacing much of the trading volume previously held by voice brokers. For the institutional "interbank" forex market, Reuters and EBS created the two primary versions of electronic matching systems.

Both systems allowed banks to submit bids and offers and trade on appropriate pricing from other banks, all based on pre-approved credit limitations. The platforms would connect buyers and sellers, and the prices exchanged in these systems would serve as benchmarks for currency price data like highs and lows.

Thanks to advancements in trading software, big international banks have been able to create their own specialized trading platforms. Banks and their institutional clients, such as businesses and hedge funds, could trade directly on live streaming prices fed over the banks' trading platforms using these services.

These systems work in tandem with matching systems, which are still the most important sources of market liquidity. Retail forex brokers launched online trading platforms for individual traders at the same time. Instead of the 1 million base currency units that are customary in the interbank market, online

currency trading allows for smaller trade quantities, such as $1 million or $2 million a million pounds Because price fluctuations are in tiny increments, popularly known as pips, usually 0.0001, forex markets deal in such enormous, notional sums.

Remember that when retail currency trading first became popular, most online currency platforms only allowed trade sizes in lots, with a conventional lot equaling 100,000 base currency units and mini-lots equaling 10,000 base currency units.

However, as the retail market has matured, brokers have begun to respond to customer demand for the opportunity to trade in smaller increments. Most brokers now provide micro 1,000 lot trading, which requires far less capital than a mini or normal lot. As a result, traders can enter the forex market with significantly less capital at risk.

In addition to a variety of lot sizes, internet brokers typically provide significant margins,

ranging from 50:1 to 200:1 and occasionally even more, depending on the restrictions of the nation in which you trade. Individual traders can now make greater deals dependent on the amount of margin they have on deposit.

A $2,000 margin deposit, for example, at 100:1 leverage, would allow an individual trader to control a position worth $200,000. Individual traders can use leverage provided by retail forex brokers to trade higher amounts in relation to the small number of pips.

Individual traders and investors can now enter the currency market thanks to companies like FOREX.com, Saxo Bank, Oanada, CMC Markets, and IG Group. You can now trade the FX market alongside huge banks and hedge funds.

Getting to the Bottom of the Numbers

The average daily amount of currency trading

is more than $5 trillion. That's a staggering figure, isn't it? No matter how you slice it, $5,000,000,000,000 is a lot of zeros. To put it in perspective, it's around 10 to 15 times the daily trading volume on all of the world's stock markets combined.

The $5 trillion-per-day figure you may have seen in the financial press or in other books on currency trading overstates the amount of spot currency trading, which is what the forex market is all about.

Trading for a certain location

The price at which you can purchase or sell currencies right now, as in "on the spot," is referred to as "spot." If you've ever traded stocks, you know that the price you can trade at is called a spot price. The word is used to distinguish spot, or cash, trading from futures trading, which involves trading for a future delivery date. The spot currency market is generally traded in two business days for settlement. Unless otherwise stated, the spot

price is most usually what you pay your currency broker when you buy and sell.

Speculating in the foreign exchange market

While business and financial transactions in the currency markets involve large sums of money, they pale in comparison to speculation-based amounts. Traders buying and selling for short-term gains based on minute-to-minute, hour-to-hour, and day-to-day price swings account for the vast bulk of currency trading volume.

Speculation accounts for up to 90% of daily trading volume, according to estimates (meaning, commercial or investment-based FX trades account for less than 10 percent of daily global volume). The overall liquidity of the FX market is unrivaled among global financial markets due to the depth and breadth of the speculative market.

The so-called "major currencies," which

represent the world's largest and most developed economies, account for around 75% of spot currency trading volume. The major currency markets are essentially unregulated by the government and operate independently of any national or international organisation or exchange.

Furthermore, the forex market operates on a regional "currency bloc" basis, with the majority of trade taking place between the USD, JPY, and EUR blocs, which represent the three main global economic regions.

Emerging market or exotic currency trading refers to trading in the currencies of smaller, less-developed economies like Thailand or Chile. Although emerging market trading has risen dramatically in recent years, it still trails developed currencies in terms of volume.

The emerging-market forex space can be illiquid due to internal factors (such as local restrictions on foreign currency transactions) and external factors (such as geopolitical

crises and the financial market crash, which can make emerging market currencies difficult to trade), which can be a turnoff for a small investor.

Obtaining liquid without becoming saturated

Liquidity refers to the amount of market interest — the amount of buying and selling volume — available for a certain asset or security at any one time.

The faster and easier it is to acquire or sell a security, the better the liquidity or the deeper the market.

Liquidity is an important element in trading since it impacts how rapidly prices fluctuate between deals and over time. Large trading volumes can be done with very little price changes in a highly liquid market like FX. Prices tend to move more quickly in an illiquid, or thin, market due to lower trading volumes. A market that only trades during specific hours (for example, futures contracts) is likewise a less liquid, thinner market.

Throughout this book, we refer to liquidity, liquidity considerations, and market interest as three of the most important elements influencing how prices move, or price action.

It's vital to remember that, while the forex market has very high liquidity overall, liquidity levels fluctuate throughout the trading day and across different currency pairs. Variations in liquidity, on the other hand, are more of a strategic matter for individual traders than a tactical issue. For example, if a huge hedge fund needs to make a trade worth a certain amount of money,

It must be concerned with tactical levels of liquidity, such as how much its trade is likely to influence market prices depending on when it is performed, because it is worth several hundred million dollars. Individuals who trade in smaller amounts don't have to worry about the amounts, but strategic levels of liquidity have a big role in determining when and how prices will move to move around

We'll look at how liquidity and market interest change throughout the global trading day and what it means for trading in certain currency pairs in the next section. (In Chapters 8 and 9, we go through various currency pairs in greater depth.)

In a single trading day, you can go around the world.

From the start of business hours on Monday morning in the Asia-Pacific time zone to the close of business hours on Friday in New York, the currency market is open and active 24 hours a day. Hundreds of global financial hubs, such as Sydney, Tokyo, and London, are open at any given time, depending on the time zone, and currency trading desks in those financial centers are active in the market.

Many financial institutions, in addition to the major global financial centers, run 24-hour currency trading desks, providing a constant

supply of market interest.

Currency trading continues even when other financial markets, such as stocks and futures exchanges, are closed. Despite the fact that it is a holiday,

Sydney, Singapore, and Hong Kong, for example, may still be open in Japan. It may be the Fourth of July in the United States, but if it's a business day, it's not the Fourth of July.

Other financial centers such as Tokyo, London, and Toronto will continue to trade currencies. The only worldwide holiday is New Year's Day, and even that is dependent on what day of the week it falls on.

THE START OF A NEW TRADING WEEK

The trading day or week has no official start time, but for all intents and purposes, the market action begins when Wellington, New Zealand, the first financial hub west of the international dateline, opens on Monday AM local time.

It roughly corresponds to early Sunday afternoon in North America, Sunday evening in Europe, and very early Monday morning in Asia, depending on whether daylight saving time is in effect in your time zone.

After the Friday close of trading in North America, the Sunday open is the point at which currency markets restart trading (5 p.m. eastern time [ET]). This is the currency market's first opportunity to react to news and events that occurred over the weekend.

Prices may have ended New York trading at one level, but they may begin trading at different levels at the Sunday open, depending on the conditions. The possibility that currency prices start on Sunday at a different level than they closed on Friday.

The weekend gap risk, also known as the Sunday open gap risk, is a danger that occurs on weekends. A gap is a change in price levels between which no prices can be traded.

Individual traders must be aware of the weekend gap risk and know what events are scheduled over the weekend as a strategic trading factor. There is no defined list of possible events, and there is no way to predict what will happen, such as a terrorist attack, a

geopolitical conflict, or a natural disaster. All you have to do is be aware of the risk and account for it in your trading approach.

The most common scheduled weekend events are quarterly Group of Twenty (G20) meetings (for more on the G20, see Chapter 3) and national elections or referendums. Just make sure you're aware of any upcoming important events. During the height of the Eurozone sovereign debt crisis, a number of last-minute rescue decisions were made over the weekend, with significant repercussions for the markets when they opened.

Prices usually pick up where they left off on Friday afternoon on most Sunday openings. Because only Wellington and 24-hour trading desks are operating at the time, the interbank market's starting price spreads will be substantially wider than usual. In the early hours of trading, price spreads of 10 to 30 points in major currency pairings are not uncommon. When it comes to banking,

Over the next several hours, as Sydney, Australia, and other early Asian centers enter the market, liquidity improves and price spreads shrink to more normal levels.

Because of the higher price spreads in the early hours of the Sunday open, most online trading platforms don't start trading until 5 p.m. ET on Sundays, when enough liquidity allows the platforms to issue their typical price quotes. Make sure you understand your broker's trading policies for the Sunday open, particularly in terms of order executions.

During the Asia-Pacific session, trading takes place.

According to a 2004 BIS survey, currency trading volumes in the Asia-Pacific session account for around 21% of total daily global activity.

Wellington, New Zealand; Sydney, Australia; Tokyo, Japan; Hong Kong, and Singapore are the major financial trading centers.

During this session, the market will be bombarded by news and data from New Zealand, Australia, and Japan. Data reports from New Zealand and Australia are usually issued in the early morning local time, which corresponds to the early evening in North America. Data from Japan is usually issued immediately before 9 a.m. Tokyo time, which corresponds to around 7 or 8 p.m. ET. Some Japanese data reports and events are also held after noon in Tokyo, which is around midnight to 4 a.m. ET.

Depending on what news and data releases are issued and what they represent, the overall trading direction for the NZD, AUD, and JPY can be determined for the entire day.

In addition, news from China, such as economic data, interest rate changes, government statements, or changes in currency policy, may be issued. Late speakers from the United States, such as Federal Reserve officials speaking on the West Coast

of the United States, may occasionally make remarks on the U.S. economy or the path of U.S. interest rates that have an impact on the value of the dollar against other major currencies.

Because of the size of the Japanese market and the relevance of Japanese data to the market, much of the action during the Asia-Pacific session is concentrated on yen currency pairs like USD/JPY and JPY crosses like EUR/JPY and AUD/JPY. Of course, Japanese financial institutions are most active during this session, so price changes can often give you a sense of how the Japanese market is doing.

Overall liquidity in the major currency pairings is more than sufficient for individual traders, with generally orderly price fluctuations. Depending on the circumstances, price movements in some less liquid, non-regional currencies, such as GBP/USD or USD/CAD, may be more unpredictable or non-existent. There may be

no cause or motivation to move that pair if no Canadian news is released in the next 12 hours, for example. However, if a significant market participant wants to transact in that pair, the price change may be greater than usual.

Trading takes place throughout the European/London session.

European financial centers open up about the middle of the Asian trading day, and the market comes into full swing. According to the 2004 BIS survey, European financial centers and London account for more than half of total daily worldwide trading activity, with London alone accounting for nearly one-third of total daily global volume.

Because the European session spans half of the Asian trading day and half of the North American trading day, market interest and liquidity are at their highest levels at this time.

Early in the European session, news and data

events from the Eurozone (and individual nations such as Germany and France), Switzerland, and the United Kingdom are often issued. As a result, the European currencies (EUR, GBP, and CHF) and euro cross-currency pairs (EUR/CHF and EUR/GBP) see some of the greatest changes and most active trading.

In the late morning hours of the European session, Asian trading centers begin to close, while North American financial centers open a few hours later, around 7 a.m. ET.

Trading takes place during the North American session.

The trading volumes are substantially higher due to the overlap between North American and European trading sessions. During this crossing time, some of the largest and most significant directional price changes occur. The North American trading session, on its

own, accounts for nearly the same percentage of world trading activity as the Asia-Pacific market, or around 22% of global daily trading volume.

The forex market makes many of its most important decisions on the value of the US dollar in the North American morning, when vital US economic data is released. The majority of US data reports are released at 8:30 a.m. ET, with some being provided later (between 9 and 10 a.m. ET). Morning data reports from Canada are also issued, usually between 7 and 9 a.m. ET. A couple U.S. economic releases are also scheduled to be released at noon or 2 p.m. ET, enlivening the New York afternoon market. (For further information on individual economic data reports.)

Around noon eastern time (ET), London and other European financial centers begin to wind down their daily trading operations. The London, or European close, as it's often

known, is noted for generating erratic bursts of activity. If enough traders opt to take profit, a directional move that occurred earlier in European trading or the New York session may be reversed(covering shorts or selling out of long holdings) (buying back short posi- tions).

Alternatively, the trend may continue as more traders join in before the end of the trading day. There is no one-size-fits-all approach to how the European close plays out, but major bursts of activity are common around this time.

On most days, market liquidity and interest levels plummet in the afternoon in New York, making for difficult trading circumstances. On calm days, the reduced overall market interest usually results in price stagnation. On busier days, when prices may have shifted more dramatically,

As fewer traders struggle for equally fewer prices and liquidity, the lesser liquidity might

cause additional outsized price fluctuations. There's no way to predict how a New York afternoon market move will play out, just as there's no way to predict how the London close will play out. Traders need only be aware that reduced liquidity conditions are more likely to prevail, and adjust appropriately.

The least liquid major currency pairs, such as USD/CHF and GBP/USD, show the most reduced liquidity and the potential for heightened volatility.

As the trading day approaches the 5 p.m. New York close, which also marks the start of the shift in value dates, North American trading interest and activity tend to wane. (For further information on rollovers and value dates, see Chapter 4.) Wellington and Sydney, however, reopened late in the afternoon in New York, and a new trading day began.

As you can see, London is the forex world's hub in terms of volume, but there are plenty of possibilities throughout the New York and Asia Pacific sessions. When trading during the Asian session, and no important data releases or events have occurred, the themes from the previous day's U.S. session tend to prevail. During the European trading session, there are always a few substantial events to move the markets and establish new themes, and the same is true for the US trading session.

Important daily events and times

You should be aware of the following daily occurrences, which tend to occur around the same times each day, in addition to the ebb and flow of liquidity and market interest during the global currency trading day.

Options that are about to expire

Currency options are usually programmed to expire either at 3 p.m. Tokyo time or at 3

p.m. New York time (10 a.m. ET). Because it tends to catch both European and North American option market interest, the New York option expiry is more prominent. The under-lying option vanishes when an option expires. Any hedging done in the spot market based on the option being alive suddenly must be unwound, causing major price fluctuations in the hours immediately up to and soon after the option expiry period.

The amount and variety of currency option interest is simply too large to suggest a single way that spot prices will always react around the expiry (there may not even be any significant option interest expiring on many days), but if you notice some volatility around 10 a.m. ET, it could be due to currency option expiry.

Currency fixes are used to set the rate.

The 8:55 a.m. Tokyo time and the 4 p.m. London time fixings are the two most

important daily currency fixings in various financial centers. A currency fixing is when the prices of currencies for commercial transactions are set, or fixed, at a specific time each day. (For further information on fixes, see Chapter 3.)

In terms of trading, these fixings may show a rush of activity in a certain currency pair in the run-up (usually 15 to 30 minutes) to the fixing time, which then abruptly terminates at the fixing time. A fast gain in a certain currency pair fueled by fixing-related buying, for example, may abruptly halt at the fixing moment, with the price quickly reverting to its previous level.

The WM/Reuters fixing rates are typically used as a benchmark for the London FX fix. At the time of writing, global financial market regulators were looking into possible forex fix manipulation. The findings of this inquiry may result in future adjustments to the fixing process. (For further information on FX market regulation, see Chapter 8.)

On the currency futures markets, squaring up

Through its International Monetary Market (IMM) subsidiary exchange, the Chicago Mercantile Exchange (CME), one of the world's largest futures markets, sells currency futures. A currency futures contract defines the price at which a currency can be purchased or sold at some point in the future. The IMM closes daily currency futures trading at 2 p.m. central time (CT), which is 3 p.m. ET. To limit their overnight exposure or meet margin requirements, many futures traders like to square up or close any open positions at the end of each trading session.

A rush of activity periodically spills over into the spot market in the 30 to 45 minutes coming up to the IMM close. Because of the sum

The spot currency market's liquidity is at its lowest in New York after noon, and significant swings in the futures markets can cause volatility in the spot market at this

time. There's no way to know for sure whether or not the IMM close will cause a move in the New York afternoon spot market; all you can do is be aware of it and understand that it can cause price distortions in the short run.

The dollar index is a measure of the value of the dollar in the United States.

The United States dollar index is a futures product traded on the New York Board of Trade (NYBOT) and the Financial Instruments Exchange (FINEX) in Dublin. The dollar index is a weighted average of the US dollar's value versus a basket of six other major currencies. It is highly skewed toward European currencies.

THE CHINESE RENMINBI'S ASCENSION

China has been steadily improving its position in the global economy. It was the world's second-largest economy at the time of writing, but the Chinese currency, the renminbi, was not (also known as the yuan). Although the renminbi's importance in global forex trading has grown, the renminbi was the ninth most-traded currency in the world in 2013, according to the BIS Triennial Central Bank Survey.

In terms of worldwide FX volumes, this equates to %. However, the majority of this trading activity is solely for commercial

purposes.

The Chinese government regulates the value of the renminbi, making it a controlled currency. This makes trading for speculative purposes extremely difficult. Either the currency does not move much (since it can only move within a controlled band, which means there are few trading chances), or the currency moves a lot (because it can only move within a controlled band, which means there are few trading opportunities). The government steps in unexpectedly, causing a wave of volatility that might knock you off your feet before you realize it.

You can trade the renminbi with most currency brokers, but why would you want to? Some predict that China's government will gradually relinquish its grip on the yuan and allow it to trade freely. Because of the importance of the Chinese economy, the renminbi could become a currency that is liquid enough to compete with the US dollar if it could trade freely. For the time being,

however, it does not appear that Beijing will adopt a more open monetary regime anytime soon.

Warning: Because a controlled currency like the renminbi is somewhat illiquid, it can undergo huge price swings if the government decides to interfere unexpectedly. Trading the renminbi is therefore considered risky.

Other currencies' exact weightings in the US dollar index are unknown.

57.6% for the euro

13.6 percent for the Japanese yen

11.9 percent for the British pound

9.1% for the Canadian dollar

4.2 percent for the Swedish krona

3.6 percent for the Swiss franc

The Eurozone, the United Kingdom, Sweden, and Switzerland account for 77.3 percent of the basket's currency value.

The United States dollar is the world's most important currency, and the majority of forex trading involves the dollar on one side of the transaction. Commodities are priced in dollars, and central banks hold a large portion of the world's currency reserves in dollars. As a result, the dollar (sometimes known as the greenback or the buck) is the most liquid currency in the world. You need to know if the dollar is strong or weak as a trader. The dollar index is a measure of the value of the dollar in the United States.

This is because it provides you with a broad picture of how the dollar is performing in the G10 forex market. Follow the rules as a currency dealer.

The technical developments of the US dollar index.

Other Financial Markets and Currencies

The forex market, as much as we'd like to think of it as the end-all and be-all of financial trading markets, doesn't exist in a vacuum. Some of these other markets, such as gold, oil, stocks, and bonds, may be familiar to you.

There's a lot of nonsense and misinformation floating around about the supposed interdependence of these markets and currencies, or individual currency pairs. To be sure, even if the correlation is zero (meaning the two markets aren't correlated at all), you can always find a correlation between two different markets over some period of time.

Avoid becoming engrossed in the ostensible correlations between the forex market and

other financial markets. Even when a high degree of correlation is found (meaning the two markets move in lockstep or inversely), it is almost always over a long period of time (months or years) and provides little insight into how the two markets will correlate in the short term (minutes, hours, and days).

Another thing to keep in mind is that even if two markets have been correlated in the past, there is no guarantee that the correlation will persist now or in the future. For example, depending on when you look at gold and the US dollar, which are said to have a strong negative correlation, the correlation coefficient could be as high as –0.8 (a solidly negative correlation) or as low as –0.2. (very close to a zero correla- tion, meaning that the two are virtually noncorrelated).

Always remember that each of the various financial markets is a market in and of itself, with its own internal dynamics based on data, news, positioning, and sentiment. Will

markets cross paths and exhibit varying degrees of correlation on occasion? Of course, keeping an eye on what's going on in other financial markets is critical. But it's also critical to look at each market from its own perspective and trade each one separately.

With that lengthy disclaimer in mind, let's take a look at some of the other major financial markets and see what we can learn about currency trading from them.

Gold

Gold is commonly regarded as an alternative to the dollar as a hedge against inflation.

In times of economic or political uncertainty, the US dollar serves as a store of value. In the long run, the relationship is mostly inverse, with a weaker USD implying a stronger USD.

A stronger USD is usually associated with a higher gold price, while a weaker USD is associated with a lower gold price. However, each market has its own dynamics and liquidity in the short run, making short-term trading relationships generally shaky.

Because the gold market is much smaller than the forex market, we'd rather keep an eye on what's going on with the dollar than the other way around if we were gold traders. With that in mind, large swings in gold prices tend to attract currency traders' attention and have an inverse relationship with the dollar.

Oil

On the Internet, there is a lot of misinformation about the supposed relationship between oil and the USD or other currencies like the CAD, NOK, or JPY. The idea is that, because some countries are oil producers, their currencies are positively (or negatively) affected by increases (or decreases) in the price of oil. If the country is

an importer of oil, the theory goes, its currency will be hurt (or helped) by higher (or lower) oil prices.

Correlation studies show no appreciable relationships to that effect, espe- cially in the short run, which is where most currency trading is focused. When there is a long-term relationship, it's as evident against the USD as much as, or more than, any individual currency, whether an importer or exporter of black gold.

The best way to look at oil is as an inflation input and as a limiting factor on overall economic growth. The higher the price of oil, the higher inflation is likely to be and the slower an economy is likely to grow.

The lower the price of oil, the lower inflationary pressures are likely (but not necessarily) to be. Because the United States is a heavily energy-dependent economy and also intensely consumer-driven, the United

States typically stands to lose the most from higher oil prices and to gain the most from lower oil prices.

We like to factor changes in the price of oil into our inflation and growth expectations, and then draw conclusions about the course of the USD from them (see more in Chapter 7). (see more in Chapter 7). Above all, oil is just one input among many.

Stocks

Stocks are microeconomic securities, rising and falling in response to indi- vidual corporate results and prospects, while currencies are essentially mac- roeconomic securities, fluctuating in response to wider-ranging economic and political developments. As such, there is little intuitive reason that stock markets should be related to currencies. Long-term correlation studies bear this out, with correlation coefficients of essentially zero between the major USD pairs and U.S. equity markets over the last five

years.

Risk on/risk off: Wax on, wax off

One of the first things new clients ask is what risk on/risk off means. This is a piece of finan- cial market jargon that all traders should know, because it can determine the direction of a currency. Risk on/risk off refers to changes in investment behavior in response to global eco- nomic conditions. For example, when risk is perceived as being low, risk on/risk off states that investors tend to engage in higher-risk activities; in contrast, when the risks are per- ceived as high, investors tend to move toward lower-risk investments.

Risky currencies include emerging markets and some of the less liquid G10 currencies,

such as the Scandis (the Norwegian krone and Swedish krona), CAD, AUD, and NZD. Interestingly, most of the higher-risk curren- cies are also the currencies of commodity producers. According to risk on/risk off, these

currencies should fall when risk is perceived as being high.

In contrast, the JPY, CHF, and, occasionally, the USD are considered safe havens and tend to be bought during periods when risk aversion is high. The JPY is probably the most-famous safe haven; it can rally when the risk is centered in Japan. For example, after the 2011 Japanese tsunami, the yen surged.

The two markets occasionally intersect, though this is usually only at the extremes and for very short periods. For example, when equity market vola- tility reaches extraordinary levels (say, the Standard & Poor's [S&P] loses 2+ percent in a day), the USD may experience more pressure than it other- wise would — but there's no guarantee of that. The U.S. stock market may

have dropped on an unexpected hike in U.S. interest rates, while the USD may rally on the surprise move.

In another example, the Japanese stock market is more likely to be influenced by the value of the JPY, due to the importance of the export sector in the Japanese economy. A rapid rise in the value of the JPY, which would make Japanese exports more expensive and lower the value of foreign sales, may translate to a negative stock-market reaction on the expectation of lower cor- porate sales and profitability.

Bonds

Fixed income or bond markets have a more intuitive connection to the forex market because they're both heavily influenced by interest rate expectations. However, short-term market dynamics of supply and demand interrupt most attempts to establish a viable link between the two markets on a short-term basis. Sometimes the forex market reacts first and fastest depending on shifts in interest rate expectations.

At other times, the bond market more accu-

rately reflects changes in interest rate expectations, with the forex market later playing catch-up (because it takes longer to turn a bigger ship around) (because it takes longer to turn a bigger ship around).

Overall, as currency traders, you definitely need to keep an eye on the yields of the benchmark government bonds of the major-currency countries to better monitor the expectations of the interest rate market. Changes in relative inter- est rates exert a major influence on forex markets. (See Chapter 7 for more on interest rates and currencies.)

Using a Practice Account to Get Started

The easiest method for newbies to currency trading to get a feel for what it's all about is to open a practice account with any of the online forex brokers. Most online forex brokers provide sample accounts so that you may get a feel for how the forex market works in real time. Practice accounts are loaded with "virtual" money, allowing you to trade

without risking any real money and acquire expertise with margin trading.

Practice accounts allow you to get a feel for the forex market's minute-to-minute price changes. You'll be able to monitor how prices fluctuate throughout the day, as well as how different currency pairs compare to one another. When big news and economic statistics are released, keep an eye on the action to see how the forex market reacts to the new information.

You can not only see how the forex market works in real time, but you can also learn about it.

Start trading in real-time market circumstances without risking your money.

Experiment with several trading methods to determine what works best for you.

Learn how to use different orders and how to manage open positions.

Become more knowledgeable about how margin trading and leverage work.

Begin analyzing charts and paying attention to technical indications.

We believe that using a practice account while reading this book is a fantastic approach to get a feel for many of the ideas and topics we discuss. A real-time currency trading platform with constantly changing values, market updates, and charting tools needs to be worth a book if a picture is worth a thousand words. We'd like to think we're fairly good at explaining how currency trading works, but seeing it for yourself is the best way to learn.

Realistic interpretation of your results

The 21st-century version of paper trading is trading in a practice account. Paper trading entails making deals on paper based on real-time market values without risking any actual

money. Practice accounts are a more advanced version of paper trading in which you just click and trade while the trading platform keeps track of everything.

Whether you're trading in an online forex practice account or paper trading on stock quotes from the morning paper, remember that your results aren't real because no real money was at stake.

Consider this: If you make a handshake wager with a friend on a sporting event, you're usually not too worried about whether you win or lose.

Whether you win or lose is irrelevant. You are not required to watch the game. However, if you bet $50 or $100 on the game, you'll almost certainly be watching the entire game and shouting and yelling along the way. The difference: When actual money is on the line, your emotions come alive.

Practice accounts are an excellent method to

get up up and personal with the forex market. They're also a great method to get a feel for a broker's platform's features and capabilities. The emotions of trading with actual money, on the other hand, are impossible to replicate. To get the most out of your practice account experience, you should handle it as if it were real money to the extent possible.

Because each trading platform has distinct capabilities and functionalities, we propose that you open practice accounts with a few different forex brokers. Furthermore, each broker has its own trading procedures, charting programs, and research offers. Also, get a sense of the degree of customer service you'll get as a client. (The Cheat Sheet has further information on selecting a forex broker.)

WHO IS INVOLVED IN CURRENCY TRADING

Meet the Characters

Understanding the origins of currency rates

Taking a step onto a trading floor

Using the FX market for hedging and investing

Recognizing that the name of the game is speculating

Keeping track of foreign currency reserves

Based on trade volumes, the forex market is frequently referred to as the world's largest financial market. However, this vast market was not without flaws.

Until the early 2000s, most individual traders and investors were unaware of it.

That leaves a lot of people in the dark about the currency market: how it works, who trades it, and why. This chapter examines the structure of the foreign exchange market as well as the primary players. Along the way, we'll explain how they do business and what it means for the market as a whole.

If you feel that knowledge is the lifeblood of financial market trading, as we do, we think you'll enjoy our introduction to the currency market's movers and shakers. You'll be able

to make more sense of what you see and hear in the market if you have a better understanding of who's participating in the FX market.

"The Market" Is the Interbank Market.

Whether they realize it or not, when people talk about the "currency market," they're referring to the interbank market. The interbank market is where the truly large sums of money are exchanged. One million of the base currency, such as €1 million of EUR/USD or $1 million of USD/JPY, is the minimum deal size. Much

Larger trades (in the hundreds of millions of dollars) are commonplace and can be completed in a matter of seconds. Larger trades and orders are a common occurrence in the market.

The prices you see on your trading platform

are based on the prices being traded in the interbank market for individuals trading FX online.

The interbank market's sheer vastness contributes to its popularity as a trading venue, as it allows investors of various sizes to participate without significantly affecting prices. It's one of those markets where we believe size doesn't really matter. Spot traders have been correct on million-dollar bets, while sophisticated hedge funds have been wrong on half-billion-dollar bets.

By any estimate, daily trade volumes dwarf global stock trading volumes by a factor of ten. Daily FX trading volumes were estimated to be over $5 trillion in the most recent Bank of International Settlements (BIS) report, released in 2013.

Obtaining access to the interbank market

So, what exactly is the interbank market, and how did it start? The currency market was created to enhance international trade and commerce. The natural financial institutions to operate as the currency exchange middleman were the largest international commercial banks, which financed international trade through letters of credit and bankers' acceptances. They also operated a foreign branch network in each country to help with currency transfers and settlement of FX transactions.

Over the course of several years, an informal interbank market for currency trading emerged. The interbank market is "between banks," as the prefix suggests, with each trade signifying an agreement between the banks to exchange agreed-upon sums of currency at a specified rate on a specific date. To distinguish it from the currency futures market, which is the only other regulated market for currency trading, the interbank market is sometimes known as the cash market or the spot market.

Currency futures markets coexist with the interbank market, but they are clearly the dog's tail wagging in the spot market. Currency futures are often constrained as a market by exchange-based trading hours and lower liquidity than the spot market.

The interbank market grew up without much oversight from the government, and it is still mostly uncontrolled today. Apart from municipal or national regulators, there is usually no regulatory body for spot currency trading regulations in the banking industry Interbank trade grew primarily as a result of credit lines between foreign banks and the development of trading practices over time.

When it came to currency trading, the big commercial banks used to control the roost, while investment banks stayed concentrated on stocks and bonds. However, the financial industry has witnessed major consolidation in the previous 20 to 25 years, with iconic brands being submerged into massive

financial conglomerates as a result of bank merger after bank merger. In New York City alone, there were over 200 institutions with FX trading desks just 20 years ago.

That number is now far under a hundred. Overall trade volumes, on the other hand, have constantly climbed, demonstrating the strength of electronic trading.

Currency trading is now primarily concentrated in the hands of a small number of major global financial institutions, including UBS, Deutsche Bank, Citibank, JPMorgan Chase, Barclays, and Goldman Sachs, to name a few. Along with the top banks, hundreds of smaller foreign banks and financial institutions trade, all of which add liquidity and market interest.

From one bank to another and beyond

The interbank market is a worldwide network of multinational banks operating in financial centers. Banks have trading operations to

facilitate proprietary trading (also known as prop trading) for their own accounts and to provide currency trading services to its customers. Customers of banks can range from businesses and government bodies to hedge funds and rich individuals.

Interbank trading is a type of trading that takes place between banks.

The interbank market is an over-the-counter (OTC) market, meaning that each trade represents a contract between the deal's two counterparties. For the trades, there are no exchanges or guarantors, only each bank's balance sheet and a pledge to pay.

Electronic matching services, such as EBS and Reuters Dealing, handle the majority of spot trading in the interbank market. Traders can enter their bids and offers into the market, hit bids (sell at the market), and pay offers using electronic matching systems (buy at the market). Price spreads differ by

currency pair and shift throughout the day as market interest and volatility fluctuate.

The matching systems have credit limits that have been pre-screened, and a bank will only see prices from approved counterparties. Before a contract, pricing is secret, so you can't identify which bank is offering or bidding, but the counterparties' names are revealed shortly after the deal closes.

The rest of interbank trading is handled by currency brokers, who are referred to as voice brokers to distinguish themselves from electronic brokers. Traders can use these brokers to place bids and offers in the same way that they use electronic matching services. Voice brokers were the key market intermediaries between banks prior to the electronic matching services.

Taking a step onto a currency exchange floor

Although huge bank trading rooms have diminished since the financial crisis of 2008–2009, interbank trading rooms can still be active and are manned by a range of market specialists, each with a unique function to perform. A typical currency trading room has the following features:

Flow traders: Also known as execution traders, these are the market makers who display two-way pricing for the bank's customers to purchase and sell. If a customer makes a trade, the execution trader must subsequently cover the ensuing transaction in the interbank market, ideally profitably. These traders are also in charge of keeping an eye on the market and executing customer orders. These are the traders who are responsible for the majority of electronic prices and price movement.

Proprietary traders: These traders specialize in speculative trading on behalf of the bank. Their bets might range from short-term day trading to longer-term macroeconomic

wagers. Following the financial crisis of 2008–2009 and regulatory measures such as the Volcker Rule, banks' trading for their own accounts has decreased dramatically, and many proprietary trading desks have shuttered or relocated to hedge funds.

Forward traders are involved in the forward currency market, which refers to trades that are conducted after the typical spot value date. The forward market is simply an interest rate differential market, in which several currencies' interest rates are traded. These traders provide pricing for non-spot deals and currency swap agreements to the bank's customers. They are also in charge of the bank's interest rate risk in multiple currencies.

Options traders: Options traders are in charge of the bank's outstanding currency options portfolio, or book. They use the spot market to hedge the portfolio, use option techniques to speculate for the bank's own account, and provide pricing to the bank's customers on requested option strategies.

Salespeople: The salespeople serve as a link between the trading desk and the bank's customers. They provide market flow and who is buying and selling to the bank's customers, as well as offer spot and option trading strategies and execute trades between the bank and its customers.

Financial Investors and Hedgers

The FX market is at the intersection of global trade, international finance, and international investing. Whether it's a U.S. corporation handling the balance sheets of its foreign affiliates or a German mutual fund launching an international stock fund, all must pass through the forex market at some time.

Financial transactors and speculators are the two main types of participants in the currency market. Financial traders participate in the forex market as part of their broader operations, but not always for currency

reasons. Speculators are just interested in making money.

Speculators account for the majority of FX market turnover. According to market estimates, up to 90% of daily FX trading volume is based completely on conjecture. In the "Speculators" portion of this chapter, we look at the different sorts of speculators and their functions, but we'd like to present the players who are engaged in the forex markets for non-speculative reasons.

For various reasons, financial transactors are crucial to the currency market:

Their transactions are often in the hundreds of millions or billions of dollars.

Their transactions are typically one-time affairs.

They aren't usually price sensitive or profit-driven.

When you add all of these factors together, you're looking at potentially very huge, one-time trading flows that aren't concerned with where the present market is trading or where it's going. They come into the market to do their business and then leave, introducing a level of market inefficiency that allows traders to profit on counter-trend movements.

You're hedging your bets.

Hedgers come in a variety of shapes and sizes, but they are not to be confused with hedge funds. (Despite its name, a hedge fund's investments are often 100 percent speculative.)

Hedging is the process of removing or minimizing risk. Hedging is a term used in financial markets to describe a transaction that is aimed to protect against an unfavourable price movement in an underlying asset. Hedgers in the forex market

are attempting to protect themselves from a negative price movement in a certain currency rate.

Hedging in the context of international trade

The ability to facilitate international trade is one of the more conventional motivations for hedging in the currency market. Assume you're a widget producer in Germany who has just received a significant order to supply a UK-based manufacturer with a large quantity of widgets. You agreed to be paid in British pounds to make your bid more appealing (GBP).

However, because your production costs are denominated in euros (EUR), you are exposed to the risk of the GBP weakening versus the EUR. This would reduce or possibly eliminate your profit margin on the deal because the amount of GBP in the contract would be worth less EUR back home. You would sell GBP against EUR in

the FX market to insure, or hedge, against that possibility. If the pound fell versus the euro, the value of your market hedge would rise, offsetting the reduced value of the GBP you'd get. If the pound falls versus the euro, you'll lose money on the hedge.

Gains in currency conversions compensate for this. (Each pound would have a higher value in euros.)

Hedge fund managers use a number of hedging strategies and can use a variety of currency hedging instruments. Currency options can be utilized to remove currency risk on the downside while also allowing the hedger to profit from favorable price moves. Currency forward transactions, which are based on the current spot rate and interest rate differentials between the two currencies, essentially lock in a currency price for a future date.

Trade-related hedging appears in the spot

market on a regular basis in two forms:

At a number of daily currency fixings: The most important is the London after-noon fixing, which takes place every day at 4 p.m. local time (11 a.m. eastern time) (ET). Each day at 8:55 a.m. Tokyo time, which corresponds to 6:55 p.m. eastern time, the Tokyo fixing takes place (ET). A fixing is a process in which commercial hedgers place advance orders to buy or sell currencies. At the time of the fixing, the orders are filled at the pre-vailing spot rate (the rate is fixed).

The discrepancy between buying and selling orders usually results in a net amount that needs to be bought or sold in the market before the fixing time. On some days, significant sums (hundreds of billions of dollars or more) are bought or sold in the hour or so coming up to the fixing time. That market interest has been met and vanishes after the fix. The most activity is often seen during month-end and quarter-end fixes.

Short-term traders must pay close attention to live market commentary to determine whether there is significant buying or selling interest for a fix. (For more information on anticipated future modifications to the repairing procedure, see Chapter 2.)

Mostly in USD/JPY, where Japanese exporters often have substantial sums of USD/JPY to sell: Japanese exporters receive dollars in exchange for their goods, which must subsequently be translated into JPY (sell USD/buy JPY). The Japanese export community is close-knit, and their orders are likely to arrive in huge quantities and at similar prices. Individual traders are most likely to learn about Japanese exporter selling interest via real-time market remarks.

Currency options hedging

The currency option market is a large counterpart to the spot market that has a significant impact on day-to-day spot trading. Traders of currency options often manage a

portfolio of option positions. Options traders frequently use delta hedging and gamma trading to increase their profits. Option portfolios establish a synthetic, or hypothetical, spot position based on spot price movements, without entering into a comprehensive options discussion here (we cover currency options in Chapter 6).

They trade the synthetic spot position as if it were a real spot position on a regular basis to optimize the profit on their options portfolios. Delta hedging, often known as gamma trading, is the practice of trading the synthetic positions created by options.

Hedge fund option traders are typically seen selling at technical resistance levels and purchasing at technical support levels. When a currency pair remains inside a range, it can perform admirably. When range breakouts happen, however, options traders often have to cover their range bets quickly, adding to the force of the directional break- out. As

technical levels are tested, keep a look out for stories of option-related buying and selling.

The option expiry at 10 a.m. ET, when options set to expire that day that finish out of the money cease to exist, is another daily characteristic of the spot market.

Any relevant hedging for the option must then be unwound, but if the option is way out of the money, this is likely to have been done before to expiry. Traders should monitor market comments to see whether big option interest is scheduled to expire on any given day, and they should expect a frenzy of option-related buying and selling following the 10 a.m. expiry.

Flows of international capital

One of the reasons currency markets are so loosely controlled is because no developed country wants to impose limitations on global

money flow. International money is the lifeblood of established economies and the driving force behind the BRIC nations' fast ascent (Brazil, Russia, India, and China).

Russia, India, and China are three of the world's most populous countries. The forex market is essential to the proper operation of international debt and equity markets, as it allows investors to readily get the currency of the country in which they wish to invest.

The other major nonspeculative sector in the currency market is financial investors. When it comes to the forex market, financial investors are the ones who make the decisions.

Almost all of them are only passing through on their way to another investment. Financial investors frequently treat currencies as an afterthought, as they are more concerned with their ultimate investment goal, whether it is Japanese shares, German government bonds, or French real estate.

Mergers and acquisitions allow companies to cross boundaries.

M&A activity is frequently international, and it shows no signs of slowing down. International companies are in a global race to capture and expand market share, and cross-border acquisitions are often the simplest and quickest way to accomplish it.

When a firm decides to buy a foreign company, the transaction can have significant foreign exchange implications. Take attention of the responses to the following two questions when significant M&A agreements are announced:

What are the countries and currencies involved? Because both nations utilize the euro, there are no currency ramifications if a French electric utility buys an Austrian power company (EUR). However, if a Swiss pharmaceutical business announces the acquisition of a Dutch chemical company, the Swiss company may need to buy EUR and

sell CHF to complete the transaction.

What percentage of the transaction will be done in cash? There are no forex market ramifications if it's an all-stock transaction. If the cash element is significant, however, forex markets will notice and begin to speculate on the currency pair in question.

Speculators

Speculators are market participants who are primarily interested in one thing: making money. Unlike hedgers, who already have some currency market risk, speculators do not have any currency risk until they enter the market. Hedgers enter the market in order to mitigate or eliminate risk.

Speculators enjoy taking risks in order to profit from long- or short-term price changes.

Speculators (abbreviated as specs) are the ones that make a market efficient. They add liquidity to the market by bringing their

perspectives and, most importantly, their capital. Liquidity smooths out price fluctuations, keeps trading spreads modest, and helps a market to grow.

Speculators are in charge of the forex market. According to conventional market estimates, upwards of 90% of daily trade volume is speculative. Welcome to the club if you're trading currencies for your own account. You may credit the specifications for providing a liquid market and lowering transaction costs if you're trading currencies to hedge a financial risk.

Speculators come in a variety of shapes and sizes, and they use a variety of trading tactics. In this section, we'll look at some of the most common sorts of speculators to get a sense of who they are and how they operate. You might pick up some suggestions to better your own approach to the market along the road. We believe that, at the very least, this information will help you better comprehend market commentary on who is buying and

selling.

Hedge funds are a type of mutual fund that invests

Hedge funds are a sort of leveraged fund that encompasses a wide range of speculative asset management funds that borrow money to speculate on real assets under management. For example, a hedge fund with $100 million in assets under management can leverage that money (through margin agreements with trading counterparties) to get trading limits of $500 million to $2 billion. Hedge funds must meet the same margin rules as you and me, but with a lot more zeros.

A Commodity Trading Advisor is the second main type of leveraged fund (CTA). The futures markets are where a CTA is most active. However, because the forex market is open 24 hours a day, CTAs routinely trade spot FX.

The most significant distinction between the two types of leveraged funds is in terms of regulation and oversight. The Commodity Futures Trading Commission (CFTC), which also oversees retail foreign exchange firms, regulates CTAs. As a result, CTAs must comply with a slew of regulatory and reporting obligations. Hedge funds, on the other hand, continue to operate practically unrestricted. What's essential is that they all use aggressive forex trading tactics, treating currencies as a different asset class from stocks and commodities.

Leveraged funds in the forex market might maintain positions for a few hours to days or weeks. When you hear leveraged names purchasing or selling, it's a sign of short-term speculative activity, which can give you a hint about where prices are headed in the near future.

Black boxes, models, and systems are being used to make predictions.

Many leveraged funds have chosen to trade financial markets using a quantitative methodology. A quantitative strategy involves making purchase and sell decisions using mathematical calculations and models. The unique quantitative method utilized to produce trading choices is referred to as the black box. Data is input, trade signals are output, and no one understands what's inside the black box. Model or system-based funds are other terms for black box funds.

Some models are built on intricate statistical correlations between different currencies, commodities, and fixed-income instruments. Others are based on macroeconomic information including comparable growth rates, inflation rates, and geopolitical threats. Others are based on the underlying currency pair's technical indicators and price research. Because the system will use established rules to enter and exit deals, these are sometimes referred to as rules-based trading systems.

You can design your own model or rules-

based trading system if you're technically or statistically inclined. Many online trading platforms provide API access to their systems, allowing you to pull price data from the platform, filter it via your trading system, and generate trade signals. Some even enable for trade completion without the need for further user interaction. Check to discover if your online currency brokerage allows automated trade executions and has an API.

Expert advisors are ready-made automated trading systems that are available these days (EAs). Retail customers can get them from most currency brokers. If you're willing to let someone else design a trading program for you, it could make your life easier, but you should be aware that all automated programs come with their own amount of risk. (For more detail, see Chapter 10.)

Trading in a discreet manner

A discretionary trading fund is the polar

opposite of a black box trading system. In this example, discretion refers to the fund manager's judgment and overall market outlook. Although the fund manager may use a technical or system-based approach, he or she prefers to have a human make the final decision on whether or not to execute a trade. A refined form of this strategy takes trade signals but leaves execution to the discretionary fund manager's trading team, which aims to maximize position entry/exit depending on short-term market dynamics.

Global-macro funds, a type of discretionary fund that bases its trading tactics on macroeconomic and political analyses, are another option. This type of discretionary fund manager is usually thinking in terms of a longer time horizon. The fund could be banking on a peak in the interest rate cycle or the possibility of an economic downturn. Shorter-term variations on this theme can take positions in response to a specific event risk, such as the outcome of the next central

bank meeting or a national election.

Trading at a high frequency

High-frequency trading (HFT) is a sort of algorithmic or black-box trading that has gained popularity in recent years. It's a quick and easy way to trade currencies and other assets. High-frequency traders trade in and out of short-term positions in milliseconds or fractions of milliseconds, with the goal of making a fraction of a penny on each trade.

Since 2000, HFT has erupted onto the scene and has grown at a tremendous pace. It is not, however, without its detractors. Some people feel that high-frequency trading (HFT) creates excessive market volatility; it was linked to the 2010 "flash crash."

Today, HFT is mostly used by institutions and hedge funds. For a variety of reasons, most retail brokers do not offer HFT and actively discourage clients from doing so:

Cost: Because HFT execution occurs in a fraction of a second, it necessitates top-of-the-line Internet connections and hardware, which ordinary traders may lack. Any latency in your trading (for example, if a sluggish Internet connection causes a delay between placing your order and execution) could expose you to losses.

Regulation: On the whole, good retail brokers adhere to strong trading standards, and the reputational difficulties that now accompany HFT have been a deterrent thus far.

Traders, both large and little, engage in day trading on a regular basis.

This is where you and I fit into the currency market's big picture. If the vast majority of currency trading volume is speculative, the majority of that speculative activity is short-term. The term "short-term" can refer to anything from a minute to an hour, although it rarely refers to anything more than a day or two. Short-term day traders form the

backbone of the market, from interbank traders scalping EUR/USD (high frequency in-and-out trading for a few pips) to online traders watching for the next move in USD/JPY.

Intraday trading has long been the key source of interbank market liquidity, providing fluid prices as well as a conduit for any institutional flows that enter the market. Day traders are mostly concerned with the next 20 to 30 pips in the market, making them the primary source of short-term price swings.

When you're looking at the market, imagine tens of thousands of similar faces staring back at you, all attempting to make the same currency trading gains that you are. It's helpful to visualize this so you know you're not alone and who you're up against.

Individual retail traders have been driven into the mainstream of the forex market by the rise of internet currency trading. The

institutional interbank market refers to online currency brokerage businesses as retail aggregators because they generally aggregate their clients' net positions for hedge ink purposes. To manage their market exposure, internet brokerages trade on the interbank market.

Governments and central banks are two types of institutions.

National governments participate in the currency market on a regular basis, but not to try to realign or move the prices of major currencies. (We go into greater detail about their monetary policies in.)

National governments, on the other hand, use the forex market to fund their operations, make transfers, and manage their foreign currency reserves. We won't go into detail about the first two functions because they have little impact on the day-to-day FX

market. However, the final one has gained in importance in recent years, and all indications are that it will continue to play a significant role in the years ahead.

Management of the currency reserve

The way national governments develop and invest their foreign currency reserves is referred to as currency reserve management. Through international trade, foreign currency reserves are built up. Countries with huge trade surpluses will build up foreign currency reserves over time. When a country exports more than it imports, it has a trade surplus. Foreign currency balances accumulate because it receives more foreign currency for exports than it spends on imports. China, being one of the world's major exporters, has vast reserves worth trillions of dollars.

The US dollar has long been the dominant currency for most countries' international reserve assets. According to data from the International Monetary Fund (IMF), the USD

accounted for slightly over 60% of global currency reserve holdings in June 2014, with EUR (25%) and JPY (4%) coming in second and third, respectively.

However, the US has racked up large trade and current account deficits with the rest of the world in recent years. The buildup of enormous trade surpluses in other nations, most notably in Asia, has been the other side. The United States' deficits are simply the result of the US borrowing money from nations with trade surpluses, while those countries (such as China) buy IOUs in the form of US Treasury debt instruments.

The issue is one of perception as well as sound portfolio management:

The perceived issue derives from the continued growth of US deficits, which corresponds to you borrowing money from a bank on a regular basis. Because you've

already borrowed so much, the bank will cease lending you money at some time, regardless of how good your credit is. No one knows where that point is in the case of the United States, but let's just say we don't want to find out. In recent years, the US Congress has had to lift the debt ceiling to meet the country's expanding borrowing needs. The US debt ceiling stood at more than $16 trillion at the time of writing.

The requirement to diversify assets in the name of prudence causes the portfolio-management challenge. Because of the huge share of US dollars in global forex reserves, forex reserve managers must be aware of the risks they face if the US dollar's value falls sharply. This was especially true following the financial crisis, when the

The value of the US dollar has begun to dwindle.

As a result, many national governments are attempting to diversify their reserves away

from the dollar and toward other major currencies. The euro, Japanese yen, British pound, and, to a lesser extent, the Australian dollar, have benefited the most from this trend. But, before you panic, the US dollar remains the world's principal reserve currency.

National governments (or its operatives) have become regular market participants in the daily FX market during the last few years.

In general, they appear to be actively managing their currency reserves, selling USD on rallies and buying EUR on declines. They are, however, not opposed to selling EUR on subsequent strength and repurchasing USD on decline.

Currency reserve management has risen to a new level of market prominence in recent years. Market speculation about central banks buying or selling to manage reserves has become practically everyday. The market's impact varies, but it commonly leads to the

maintenance of multiday highs and lows in the face of an otherwise strong trend.

Traders should keep an eye on real-time market commentary for indicators of central bank intervention.

The Bank for International Settlements (BIS) is a financial institution based in Switzerland

The Bank for International Settlements (BIS) serves as the central bank for central banks around the world. The BIS, which is based in Basel, Switzerland, also serves as the international banking system's quasi-government regulator. The BIS was responsible for establishing the capital adequacy rules for banks, which are now the bedrock of the international financial system.

The BIS, as a bank to national governments and central banks, frequently functions as a market intermediary for countries looking to diversify their currency reserves. By going through the BIS, those countries can remain

relatively anonymous and avoid the market being driven against them by speculation.

The BIS's presence in the market is commonly misinterpreted as a large reserve interest to purchase or sell. Keep a look out for BIS market rumors, but keep in mind that the BIS executes smaller and more routine trades on behalf of its clients.

The Twenty-First Century Group

The Group of Twenty, or G20, is a forum for the world's 20 major economies' governments and central bank governors. The developed markets and the major emerging markets, such as Mexico, Brazil, China, and Korea, as well as Saudi Arabia, are all members. The G20 has surpassed the G7 and G8 as the world leaders' gathering to watch. Currency values may be on the agenda at G20 summits depending on the conditions, and the communiqué, the official statement released at the end of each conference, may contain an

express hint for a desired shift among the main currencies. If currencies aren't a hot topic, the G20 will remark that currencies should reflect economic fundamentals and that excessive currency volatility is undesirable.

For several weeks prior to the meetings, the forex markets keenly monitor the preparations. Traders are first checking to see if currencies will be mentioned, and then checking to see which currency or currencies will be discussed. The market will normally have a sense of if currencies are a problem, as well as a general notion of what the G20 wants to see done, well ahead of time. Nonetheless, comments from ministers and their deputies participating in preparatory meetings set the tone for market expectations and sometimes elicit market reactions even before the G20 gathers, though this is uncommon.

THE MECHANICS OF FOREIGN EXCHANGE TRADING

Getting to know currency pairs

Making a profit and loss calculation

Putting a trade together

Using several forms of orders

Like any other financial market, the currency

market has its own set of market trading norms and language. If you're new to contemporary art,

The mechanics and vocabulary of currency trading may take some getting used to. But, at the end of the day, you'll notice that the majority of currency exchange customs are rather simple.

Simultaneous Buying and Selling

The most difficult mental obstacle for beginners to currencies, particularly traders with experience in other markets, is grasping the concept that each currency exchange comprises of a simultaneous purchase and sale. If you buy 100 shares of Google in the stock market, for example, it's very clear that you now own 100 shares and are hoping for a price increase. You just sell what you bought previously when you want to exit that position. Isn't it simple?

In the case of currencies, however, the

purchase of one currency necessitates the simultaneous sale of another. This is the foreign exchange market. To put it another way, if you want the dollar to rise, you should ask yourself, "Higher against what?" Another currency must be the solution. When the dollar rises versus another currency, it also signifies that it is becoming more valuable.

The value of the other currency has decreased in relation to the dollar. To put it another way, when you buy a stock, you're selling money, and when you sell a stock, you're buying money.

Currency pairs are available.

To make things simpler, forex markets refer to trading currencies in pairs, using names that combine the two separate currencies being traded against or swapped for. Furthermore, most currency pairs have been assigned nicknames or abbreviations by forex markets, which relate to the pair rather than the individual currencies involved.

The United States dollar serves as the base currency against which all other currencies are measured. The Bank for International Settlements (BIS) reported in its most recent triennial analysis of the global foreign currency market in 2013 that the

The dollar was on one side of 87 percent of all reported forex market transactions, and the dollar's dominance as the world's most powerful currency has remained almost unchallenged for decades.

The central role of the US dollar in the forex markets is due to a few key factors:

The United States of America has the world's largest economy.

The US dollar is the world's most important reserve currency.

Many cross-border transactions use the US dollar as a medium of exchange. Oil, for instance, is priced in US dollars. Even if you're a Japanese oil importer purchasing crude from Saudi Arabia, you'll pay in US dollars.

The financial markets in the United States are the world's largest and most liquid.

Even if we have seen a dysfunctional Congress in recent years, the United States is a worldwide military superpower with a solid political system!

The most important currency pairs

All of the major currency pairs have the US dollar on one side of the transaction. The international standardization organization (ISO) codes for each currency are used to convey the designations of the major currencies. Table 4-1 shows the most often traded currency pairings, as well as their

traditional names and market nicknames.

The Major US Dollar Currency Pairs (Table 4-1)

Currency Pair ISO

Long Names of Countries

Nickname

EUR/USD

United States/Eurozone*

Euro-dollar N/A USD/JPY Japan/United States Dollar-yen N/A

Long Name Nickname of ISO Currency Pair Countries

GBP/USD

Pound-dollar Sterling or Cable in the United Kingdom/United States

USD/CHF

Switzerland/United States

Dollar-Swiss Swissy

USD/CAD

Canada/United States

Dollar-Canada

Loonie

AUD/USD

Australia and the United States of America

The Australian dollar, sometimes known as

the Aussie or Oz, is a currency used in Australia.

NZD/USD

New Zealand/United States New Zealand/United States New Zealand/United States New Zealand

Zealand-dollar Kiwi

* The Eurozone is made up of all European Union nations that have chosen the euro as their official currency. Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, the Netherlands, Portugal, Slovakia, Slovenia, and Spain are the Eurozone countries as of this printing.

When monitoring the forex market or reading commentary and study, currency names and nicknames can be perplexing. Make sure you know whether the writer or analyst is talking about a single currency or a currency pair.

If a bank or brokerage releases research predicting that the Swiss franc will decline in the future, the comment refers to the specific currency, in this case CHF, implying that USD/CHF will rise (USD stronger/CHF weaker).

If the comment implies that the Swissy is expected to weaken in the future, it is referring to the currency pair and amounts to a prediction that the USD/CHF exchange rate would fall (USD weaker/CHF stronger).

Cross-currency pairs of major importance

Although dollar pairs account for the great majority of currency trading, cross-currency pairs provide an alternative to trading only the US dollar. Any currency combination that does not include the US dollar is known as a cross-currency pair, or simply cross or crosses. Cross rates are derived from the corresponding USD pairings, although they are quoted separately and frequently with a narrower spread than trading the dollar pairs

directly. (Spreads are applied in most financial markets and refer to the difference between the bid and offer, or the price at which you can sell and buy.)

Crosses allow traders to more precisely target transactions to certain currencies in order to profit from news or occurrences. For example, depending on interest rates or the economic forecast, your study may show that the Japanese yen has the worst future prospects of all the major currencies. You'd want to sell JPY to take advantage of this, but against which other currency? You consider buying USD/JPY (buying USD/selling JPY), but you come to the conclusion that the USD's prospects are not significantly better than the JPY's.

Further study on your side may point to another currency, such as the Australian dollar, that has a far brighter prognosis (for example, high or growing interest rates or evidence of a strengthening economy)

(AUD). In this case, you'd buy the AUD/JPY cross (buying AUD and selling JPY) to target your belief that the AUD has the greatest prospects among major currencies while the JPY has the worst.

When large cross-border mergers and acquisitions (M&A) are announced, cross trades can be extremely effective. If a UK multinational wants to buy a Canadian utility firm, it will have to sell GBP and buy CAD to fund the transaction. The key to trading on M&A activity is to keep track of the deal's cash portion. You won't need to exchange currencies to come up with the foreign cash if the deal is entirely stock.

The most regularly traded crosses are euro crosses, yen crosses, and sterling crosses, which focus on the three biggest non-USD currencies (EUR, JPY, and GBP). Cross pairs are also traded for the remaining currencies

(CHF, AUD, CAD, and NZD). The important cross pairs in the euro, yen, and sterling categories, as well as their market names, are highlighted in Tables 4-2, 4-3, and 4-4, respectively. Other cross-currency pairs are included in Table 4-5.

Euro Crosses (Table 4-2)

Market Name for ISO Currency Pairs

EUR/CHF

Eurozone/Switzerland

Euro-Swiss

EUR/GBP

United Kingdom/Eurozone

Euro-sterling

EUR/CAD

Eurozone/Canada

Euro-Canada

EUR/AUD

Eurozone/Australia

Euro-Aussie

EUR/NZD

New Zealand/Eurozone

Euro-Kiwi

Yen Crosses (Table 4-3)

Market Name for ISO Currency Pairs

EUR/JPY

Eurozone/Japan

Euro-yen

GBP/JPY Sterling-yen exchange rate between the United Kingdom and Japan

CHF/JPY

Switzerland/Japan Swiss-yen

AUD/JPY

Australia/Japan

Aussie-yen

NZD/JPY New Zealand Dollar/Japanese Yen

CAD/JPY Canada/Japan Canada-yen

Sterling Crosses (Table 4-4)

Market Name for ISO Currency Pairs

GBP/CHF

Switzerland/United Kingdom

Sterling-Swiss

GBP/CAD

Canada/United Kingdom

Sterling-Canadian

GBP/AUD

Australia/United Kingdom

Sterling-Aussie

GBP/NZD

Sterling-Kiwi exchange rate between the United Kingdom and New Zealand

Other Crosses (Table 4-5)

Market Name for ISO Currency Pairs

AUD/CHF Australia/Switzerland

Aussie-Swiss

AUD/CAD

Australia/Canada

Aussie-Canada

AUD/NZD AUD/NZD AUD/NZD
AUD/NZD AUD/NZD AUD/NZD AUD/NZ

CAD/CHF

Canada/Switzerland

Canada-Swiss

Currency pairs (base and counter)

When looking at currency pairs, you might observe that the currencies are merged in an odd order. Why isn't sterling-yen (GBP/JPY)

referred to as "yen-sterling" and written as "JPY/GBP" if it is a yen cross? The reason is that these quoting standards have evolved over time to reflect historically strong vs historically weak currencies, with the strong currency coming first.

It also reflects the market quotation convention, in which the base currency is the first currency in a pair. When you purchase or sell a pair, the base currency is what you're buying or selling. It's also the trade's notional, or face, value. As an example, if you buy 100,000 EUR/JPY, You just bought 100,000 euros and sold 100,000 Japanese yen for the same amount. You just sold 100,000 British pounds and acquired the identical amount of Swiss francs when you sold 100,000 GBP/CHF.

The counter currency, also known as the secondary currency, is the second currency in the pair. Who said this stuff wasn't easy to figure out? The counter currency is the denomination of price fluctuations and,

ultimately, what your profit and losses will be denominated in for you as an FX trader. If you buy GBP/JPY and it rises, you make a profit, but your gains are in yen, not pounds. (Later in this chapter, we'll go over the arithmetic for determining profit and loss.)

The long and short of it is this:

Most other financial markets use the same words to indicate market positioning as forex markets. However, because currency trading entails simultaneous purchasing and selling, it's important to understand the words — especially if you're new to financial market trading.

Going for a long time

No, we're not talking about catching a football pass from a long distance. A long position, often known as a long, is a market position in which you have purchased a

securities. It refers to having purchased a currency pair in FX. When you're long, you're hoping for prices to rise so you can sell for more money than you paid for it. You must sell what you bought in order to close a long position. When you buy at different price levels, you're adding to your longs and lengthening them.

Getting a little short

A short position, sometimes known as a "short," is a market position in which you sell a securities that you have never held. Selling a stock short in the stock market entails borrowing the stock (and paying a charge to the lending broker-age) in order to sell it. It signifies you've sold a currency pair in the forex market, which implies you've sold the base currency and bought the counter currency.

So you're still exchanging money, but in the reverse order and according to the terms of the currency pair you're quoting. Going short

or becoming short on a currency pair means you've sold it and are waiting for the price to drop so you can purchase it back at a profit. When you sell at different price levels, you're adding to your shorts and shortening them.

Short selling is either prohibited or considered too hazardous for most individual traders in most other marketplaces. Going short is just as prevalent in currency trading as going long. A common currency trading technique is "selling high and purchasing cheap."

Currency pair rates represent the relative value of two currencies rather than the absolute price of a single asset or commodity. Because currencies can decline or gain in value relative to one another in medium and long-term trends as well as minute-to-minute swings, currency pair prices are just as likely to decrease as they are to climb at any given time.

To profit from such movements, forex traders frequently use short positions to take advantage of decreasing currency values. Short selling may be unsettling to traders from other markets, but it's just something you have to get your head around.

Getting things in order

Being square or flat refers to having no place in the market. Squaring up is what you do when you have an open position and want to close it. If you're short, you'll need to buy to make up the difference. If you're long, you'll have to sell if you want to go flat. The only time you're not exposed to the market or at risk financially is when you're square.

Profit and Loss Statements

Traders use profit and loss (P&L) to determine their success or failure. You don't want to approach the forex market as an

intellectual exercise or a thrill-seeking activity. Every minute of every day, real money is made and lost. If you're going to trade currencies on a regular basis, you'll need to get to know P&L.

In online margin trading, where your P&L directly influences the amount of margin you have to work with, a good understanding of how P&L works is very important. (In Chapter 2, we cover online margin trading.) If prices move against you, changes in your margin balance will impact how much you can trade and for how long you may trade.

Liquidations and margin balances

One of the advantages of forex trading, as we discussed in Chapter 2, is the ability to use leverage, which allows you to obtain a huge level of exposure to a financial market while only putting a small amount of money at risk. Margin is the initial amount that you must

deposit into your account in order to initiate a trade.

That initial margin deposit becomes your opening margin balance, which serves as the foundation for all subsequent trades. Consider it similar to the collateral a bank will require if you request for a loan. Online forex brokerages do not issue margin calls, unlike futures markets or margin-based equity trading (requests for more collateral to support open posi- tions). Instead, they define margin-to-open-position ratios that must be adhered to at all times.

If the margin amount in your account falls below the required ratio, even for a few seconds, your broker has the right to close out your trades without warning. In most circumstances, this only occurs when a trader's account is losing money. If your broker liquidates your holdings, your losses are normally locked in and your margin

balance has shrunk.

Make certain you are familiar with your broker's margin requirements and liquidation procedures. Depending on your account size and if you're trading regular lot sizes (100,000 currency units), mini lot sizes (10,000 currency units), or micro lots, the requirements may vary (1,000 currency units). If you fall below margin requirements, certain brokers' liquidation policies allow you to liquidate all of your investments. Others, on the other hand, close out the largest losing positions or parts of losing positions until the required ratio is met once more.

The information can be found in the fine print of the account opening contract you sign. Always read the fine print of your broker's margin and trading policies to ensure you understand them.

Profit and loss, both unrealized and realized

Most online forex brokers disclose your margin balance in real-time mark-to-market calculations. Mark-to-market is a calculation that determines your unrealized profit and loss depending on where you may close your open positions in the market at the time. If you're long, the estimate will usually be based on where you could sell at that time, depending on your broker's trading platform. If you're short on cash, the price utilized will be the lowest price available at the time. The total of your initial margin deposit, unrealized P&L, and realized P&L is your margin balance.

When you close out a trading position, or a portion of a trade position, you obtain a realized P&L. If you close out the entire position and go flat, whatever profit or loss you made or lost is transferred from the unrealized P&L calculation to your margin balance. Only that percentage of the trade's P&L is realized and goes into the margin balance if you only close a portion of your open positions. Your unrealized P&L, as well

as your total margin balance, will continue to change dependent on the remaining open positions.

If you have a profitable trade open, your unrealized profit and loss will be positive, and your margin balance will rise. If the market moves against you, your unrealized profit and loss (P&L) will be negative, and your margin balance will be depleted. Because FX prices are always fluctuating, your unrealized mark-to-market P&L and overall margin amount will fluctuate as well.

Using pips to calculate profit and loss

In terms of math, profit-and-loss calculations are rather simple — they're all based on position size and the number of pips you make or lose. The smallest increment of price change in currency prices is referred to as a pip. Pips and points are two different terms that we use interchangeably.

The origin of the term pip is unknown. Some claim it's an acronym for percentage in point, but it could possibly be the FX equivalent of bond traders' bips, which stands for basis points (which equals 1/100 of a percent).

As computerized trading advances, even the venerable pip is in the process of being upgraded. The pip is the smallest increment of currency price movements, as we mentioned a few paragraphs ago. Not so fast, my friend. For many years, half-pip prices have been the norm in some currency pairs in the interbank market, and the online market is swiftly progressing to decimalizing pips (trading in 1/10 pips).

But, for now, you're better off sticking with pips to acquire a hold on P&L figures. Let's have a look at a few different currency pairs to see what a pip is. Five digits are used to quote the majority of currency pairs. The decimal point is placed differently depending

on whether the currency pair is a JPY or not; if it is, the decimal point is followed by two digits. The decimal point is followed by four digits in all other currency combinations. In every case, the pip is the last teeny-tiny digit.

The pip is highlighted in the following important currency pairs and crosses:

EUR/USD: 1.3535 EUR/USD: 1.3535 EUR/USD: 1.3535 EUR/USD:

USD/CHF: 0.9074 USD/CHF

USD/JPY: 101.43 USD/JPY: 101.43 USD/JPY: 101.43 USD/

GBP/USD: 1.6142 GBP/USD: 1.6142 GBP/USD: 1.6142 GBP/

EUR/JPY: 138.01 EUR/JPY: 138.01 EUR/JPY: 138.01 EUR

First and foremost, pay attention to the EUR/USD exchange rate. If the price of EUR/USD rises from 1.3535 to 1.3555, it has increased by 20 pips. It's only gone down 20 pips if it falls from 1.3535 to 1.3515. Pips are a simple technique to calculate the P&L. All you need to know is the size of the position to convert that pip movement into a P&L estimate. The 20-pip move translates to $200 for a 100,000 EUR/USD bet (EUR 100,000 0.0020 = $200).

Whether you were long or short for each move determines whether the amounts are positive or negative. That's a – in front of the $200 if you were short on the move higher; if you were long, it's a +. Because the P&L accrues in dollars, EUR/USD is simple to compute, especially for USD-based traders.

If you're dealing with USD/CHF, you'll need to perform additional computation before you can make sense of it. Because CHF is the counter currency, the profit and loss

statement will be in Swiss francs (CHF). You've just caught a 34-pip dip if USD/CHF drops from 0.9074 to 0.9040 and you're short USD 100,000 for the move lower. That's a CHF 340 profit (USD 100,000 0.0034 = CHF 340).

But, in real terms, how much is that? To convert it to USD, multiply CHF 340 by the USD/CHF exchange rate. Because that's where the market was last, utilize the trade's closing rate (0.9032), and you'll collect USD 376.43.

Profit and loss are taken into account while calculating margins.

The good news is that online FX trading platforms calculate your P&L for you automatically, both unrealized and realized while the trade is open and closed. So, why did we just take you through the pips-based P&L calculation? Because online brokerages will only begin calculating your profit and

loss for you once you have entered a trade.

To efficiently plan your trade and manage your risk (How big a position? Before you enter the transaction, you'll need to determine your P&L outcomes (How much margin to risk?). Maintaining your margin balance and remaining in control of your trading requires an understanding of the P&L ramifications of a trade strategy you're considering. This easy exercise can help you avoid costly blunders like placing too large a transaction or placing stop-loss orders beyond prices where your account falls below the margin requirement. When your margin balance falls below the specified ratio, you must calculate the price point at which your position will be liquidated. (We go over this topic in further depth in Chapter 13.)

Understanding Interest Rates and Rollovers

Rollovers are a currency-specific market

norm. A rollover is a transaction that transfers an open position from one value date (settlement date) to the following value date. The junction of interest rate and currency markets is represented by rollovers.

After all, money is money.

The difference in interest rates between the two currencies in the pair you're trading determines the rollover rate. That's because you're truly dealing with real money. That's correct: Currency is nothing more than cold, hard cash with a catchy name. It's like having a bank deposit when you're long a currency (cash). It's the same as taking out a loan when you're short on cash. You should expect an interest gain/expense for holding a currency position over the change in value, just as you would expect to earn interest on a bank deposit or pay interest on a loan.

The problem with currency trading is that if you carry an open position from one

valuation date to the next, you're dealing with two different bank accounts.

Consider it as having a positive balance in one account (the currency you're long) and a negative balance in the other (the currency you're short). However, because your accounts are in two distinct currencies, the respective countries' interest rates will apply.

The interest-rate differential is the difference between the two countries' interest rates. Rollovers have a greater impact when the interest rate differential is greater. Rollovers have a smaller impact when the interest rate disparity is narrower. Any number of financial-market websites can provide relevant interest-rate levels for the major currencies, but www.marketwatch.com and www.fxstreet.com are particularly useful. Look for each country's base or benchmark loan rates.

Depending on the magnitude of your stake, rollover rates have a greater impact on you.

They have a greater impact on someone who trades in the millions than on someone who trades in the tens of thousands. Regardless of your size, knowing how a rollover impacts you is still useful.

So, how do interest rates become exchange rates? After all, interest rates are expressed in percentages, whereas currency rates are not. Deposit rates produce actual cash returns, which are then netted to produce a net cash return. The currency pips, or rollover rate, is calculated by dividing the net cash return by the position size.

This is seen in the following computation. We've made things easier by only utilizing one interest rate for each currency. In the actual world, depending on whether you're borrowing or lending, each currency would have a somewhat different interest rate (depositing).

Long EUR/USD 100,000 at 1.3000 (long EUR/130,000 short USD)

3.50 percent annual interest rate in EUR 1 day = 0.035 (1 365) = 0.009589 percent annual interest rate in EUR 1 day = 0.035 (1 365) = 0.009589 percent annual interest rate in EUR 1 day = 0.035 (1 365) = 0.009589 percent annual interest rate in EUR

100,000 0.00009589 = EUR +9.59 on a Euro deposit

5.25 percent annual interest rate in USD 1 day = 0.0525 (1 365) = 0.01438 percent

The cost of a USD loan is 130,000 0.0001438 = USD –18.70.

Convert the EUR to USD because EUR/USD pips are valued in USD: EUR 9.59 1.3000 = USD 12.47.

USD 12.47–18.70 = USD –6.23 100,000 = 0.0000623

The rollover on a long EUR 100,000 trade costs 0.0000623, or –0.623 pips.

Dates of value and trade settlement

When we speak of currency trading, we are referring to trading on the spot FX market. A spot market is one in which the security being traded is traded for immediate delivery. In practice, however, instantaneous means a few business days to allow banks and financial firms to settle a trade (make a payment, deliver/receive a security).

Spot refers to trade settlement in two business days, also known as the value date, in forex markets. That time is required to process commerce across worldwide time zones and to transmit currency payments around the world.

The currency market is open 24 hours a day, starting at 5 p.m. eastern time (ET) and ending at 5 p.m. ET the next day. So, if

Monday is a trading day, Wednesday is a trading day for spot currencies (assuming no holidays). The trading date becomes Tuesday at 5 p.m. ET on Monday, while the value date is changed to Thursday. If you have an open position on Monday at 5 p.m. ET, it will be rolled over to the following value date, which will be Wednesday to Thursday in this case, or a one-day rollover.

There are no rollovers if you close your position the next day (Tuesday) and complete the trade date square because you have no position. The same is true if you never hold a position until the daily closing of 5 p.m. ET.

Spot currencies are often traded on Wednesdays for a Friday value date. The value date shifts from Friday to Monday at 5 p.m. ET on Wednesday, a weekend rollover. That's a three-day rollover (Saturday, Sunday, and Monday) in rollover calculations, which implies the costs/gains will be three times as much as any other day.

Trades in USD/CAD are the only exception to the two-day spot standard in FX. This is because the primary financial centers in the United States and Canada are in the same time zone, allowing for faster communications and wire transfers. Trades between the US dollar and the Canadian dollar settle in one business day. The USD/CAD week-end rollover occurs after the 5 p.m. ET closing on Thursday, when the value date switches from Friday to Monday. This only applies to the USD/CAD pair, not other CAD-based pairs like CAD/JPY or EUR/CAD.

Value dates and market holidays

To account for banking holidays in various nations, value dates are based on specific currency pairs. If one of the nations whose currency is involved in the exchange has a bank holiday, the rollover time can be extended.

For example, if you're trading GBP/USD on Wednesday, the regular spot value date is Friday. However, if the United Kingdom has a bank holiday on Friday, UK banks will not be open to settle the trade. As a result, the value date is changed to the next valid banking day in both the UK and the US, which is usually the following Monday. In this example, the weekend roll-over would occur at 5 p.m. ET on Tuesday, when the value date would be changed from Thursday to Monday, avoiding the Friday holiday. This is a four-day rollover period (Friday, Saturday, Sunday, and Monday).

So, what happens when the change in value date arrives at 5 p.m. ET on Wednesday? What's more, there are no rollovers in GBP/USD. Because the value date for trades made on Wednesday is already Monday, there is no need for a rollover because trades done on Thursday have the same value date as those made on Wednesday. A double value date is one in which two trading dates

(Wednesday and Thursday) agree on the same value date (Monday).

When many banking holidays in various countries occur over several days, such as around Christmas, New Year's, and the Golden Week spring holidays in Japan, rollover periods can be as lengthy as seven or eight days. So you may earn or pay seven or eight times your typical rollovers on one day, but not for the remainder of the holiday period.

Implementing rollovers

If you retain an open trade past the change in value date, your forex broker will normally carry out a rollover transaction for you.

Two offsetting trades that result in the same open position are used to apply rollovers to your open position. Roll-over rates are applied by several online forex brokers by altering the average rate of your open position. Other forex brokers apply rollover

rates to your margin balance by applying the rollover credit or debit directly to it. It's six of one and a half dozen of the other in terms of math.

Here's an example of how each model might handle an open position rollover:

Long 100,000 AUD/JPY for a value date of January 10 at a rate of 90.15

The rollover occurs at 5 p.m. ET, and the following rollover trades are applied to your account. (Keep in mind that most online brokers do this automatically.)

For a value date of January 10, you sell 100,000 AUD/JPY at 90.22. (The open position for the same value date is closed with this trade.)

You purchase 100,000 AUD/JPY at 90.206 for a January 11 value date. (For the new value date, this trade reopens the same position.)

The rollover points are represented by the difference in rates. (90.22 – 90.206 = 0.014, which translates to 1.4 points.)

If you apply the rollover to your open position's average rate, you'll get a new average rate of 90.136. (The arithmetic is as follows: 90.15 – 0.014 = 90.136.) You profited from the rollover since you are now long from a lower average price.

If the rollover is applied directly to your margin balance, the rollover points are multiplied by the position size (100,000 0.014 = JPY 1,400 earned) and converted to USD (JPY 1,400 116.00 [the USD/JPY rate] = JPY 1,400 116.00 [the USD/JPY rate] = JPY 1,400 116.00 [the USD/JPY rate] = JPY 1,400 116.00 [the USD/JPY

$12.07) has been added to your margin account.

Here's what you should know about rollovers:

After the 5 p.m. ET change in value date, or trade settlement day, rollovers are applied to open positions.

If you don't have a position over the change in value date, rollovers aren't applied. You'll never have to worry about rollovers if you're square at the end of each trading day.

The interest rate return or cost of retaining an open position is reflected in rollovers.

Rollovers indicate the interest rate differential between the two currencies in your open position, but they're calculated in terms of currency rates.

Depending on the direction of your position, rollovers are net interest earned or paid by you.

If you're long the currency with the higher interest rate and short the currency with the lower interest rate, rollovers can help you make money.

If you're short the currency with the higher interest rate and long the currency with the lower interest rate, rollovers will cost you money.

Some forex brokers may apply spreads to rollovers, which can diminish any interest received by your position.

Rollover costs/credits are determined by the size of the position; the greater the position, the higher the cost or gain.

Rollovers should be viewed as a cost of doing business that only has a little impact on overall trading decisions.

You'll probably be able to negotiate a tighter rollover spread with your online forex broker if you're going to be trading a relatively large account (say, over $25,000 in margin placed). If you're in the correct position, you'll be able to capture more gains, and if you're not, you'll be able to lower your cost of carry.

Understanding the Value of Money

Now it's time to get down to business and actually trade in the currency market. But, before we go any further, it's vital to understand how currency prices function and what they signify to you as a trader. Earlier in this chapter, we defined buying and selling as "purchasing the currency pair" and "selling the currency pair," respectively.

We'll look at how online brokerages present currency values and what it means for trading and order execution in this article. Keep in mind that different online forex brokers present prices on their trading platforms in different formats. You'll be able to traverse multiple brokers' systems and know what you're looking at if you have a clear understanding of what the pricing signify.

Offers and bids

When you're in front of your computer and looking at the trading platform of an online

forex broker, you'll notice two values for each currency pair. The bid on the left is referred to as the bid, while the offer on the right is referred to as the offer (some call this the ask). Some brokers show the bid and offer prices above and below each other, with the bid at the bottom and the offer at the top. The discrepancy is easy to spot because the bid price is always lower than the offer price.

Each bid and offer that you see will have two price components: the main figure and the dealing price. The first three digits of the overall currency rate are frequently printed in a reduced font size or even in shadow. The dealing price is the last two digits of the overall currency price and is shown in a higher letter size.

The full EUR/USD price quotation in Figure 4-1, for example, is 1.40225/1.40246. The big figure, 1.40, is there to show you the full price level (or big amount) at which the market is now trading. The bid/offer dealing price is the 225/246 element of the price.

Figure 4-1: A dealing box for EUR/USD from the FOREX. com trading platform.

Spreads

The difference between the bid and offer prices is known as a spread. For individual traders, the majority of online forex brokers use spread-based trading platforms.

The spread can be thought of as the commission charged by online brokers for executing your trades. So, even though they pretend they don't charge commissions, they could be profiting off the difference between when one trader sells at the bid price and another trader buys at the offer price. Another way to think about the spread is as remuneration for the broker's role as market maker and provider of a regular two-way market.

Spreads differ from one broker to the next, as well as between currency pairs within each

broker. In general, the narrower the spread, the more liquid the currency pair; the broader the spread, the less liquid the currency pair. This is particularly true for some of the less commonly traded crosses.

Putting a Deal Together

It's time to draw the trigger, pardner. We'll presume you've opened a practice account with an online forex broker and are ready to start making some practice trades in this section. It will be highly beneficial to get a feel for executing deals now, before you commit any actual money to a trade. (For further information on utilizing a practice account, see Chapters 2 and 11.)

In the FX market, there are two basic ways to execute trading: live trades and orders. If you're looking for a rush, don't limit yourself to the "Trading online" part; the "Orders" section has plenty of adrenaline to keep you going.

Online trading

Live dealing is a method of gaining access to the market in order to purchase or sell at the current market pricing. It's crucial to know exactly what you want to do since once you make a live deal, it's done. If you make a mistake, you'll have to make another trade to remedy your mistake, which will almost certainly cost you money.

Depending on how your broker is set up, there are a few different ways to get to the market. We'll cover everything in the parts that follow.

Dealing and clicking

Most forex brokers offer live streaming pricing that you may trade with with a single mouse click. To place a transaction on those sites, follow these steps:

Indicate the value of the trade you want to make.

To make a deal, simply click the Buy or Sell option.

The forex trading platform will respond to let you know if the trade went through, usually within a second or two:

If the trade was successful, it will display in your platform's list of deals, along with your new position.

If the trade fails due to a price change, you must restart from the beginning.

If the transaction failed due to the trade being too large based on your margin, you must reduce the trade size.

When the trade is completed, you will have a position in the market, and your unrealized P&L will begin to update in response to market price swings.

To facilitate faster trading, most click-and-deal platforms include a number of shortcuts. Some of these are intended for more experienced or active traders, so make sure you understand them before you use them. The following are the parameters that you can normally set up ahead of time:

Preset trade amounts: These save you time by eliminating the need to specify the amount each time you execute a transaction.

Stop-loss orders that are automatically placed at a predefined distance from the trade-entry price: You can turn on or off these automatic stop-loss capabilities, and you can set the number of pips away for the stop loss. These capabilities are useful for providing fail-safe stop-loss protection until a more comprehensive order for your trade strategy can be entered. Remember: You never know when a headline will send the market into a tailspin, and you don't want to be caught off guard.

All open positions will have close buttons next to them. You can automatically square up (close) the open position you've selected by clicking them (assuming the position size is within the maximum per-trade deal size).

As a tactic to attract traders, several online brokers advertise narrower trading spreads. You're probably being re-quoted if your click-and-deal transaction efforts frequently fail and the platform then asks if you'd like to make the trade at a lower price. Re-quoting occurs when a broker offers you a lower price to execute your trade, resulting in a wider spread than you bargained for.

Using smartphones to trade

A smartphone is being used to conduct up to 50% of FOREX.com's trading activity. People used to trade over the phone or with gadgets that were constantly hooked into a power source (such as a desktop computer).

Trading apps that allow individuals to trade on their phones or tablets have many advantages, such as the ability to trade while waiting in line at a store or watching a football game, but this new manner of trading comes with new hazards. For example, if your phone's battery is faulty, it could die in the middle of a trade, possibly leaving you vulnerable to losses.

Here are a few pointers on how to trade on a smartphone:

Before you attempt to place a new trade or change an existing transaction, be sure your battery is fully charged.

While trading on your smartphone, close all other apps. When trading, you need the best Internet connection possible to ensure you get frequent price updates. If you have numerous apps open at the same time, your connection will slow down and your trading will suffer.

When you're trading, be sure you have a

strong Internet connection. If you're on a train and about to pass through a tunnel that will disrupt your signal, don't trade. It's also possible that this will cost you money.

Don't trade in your phone if it's unreliable. Purchase a new device or trade in your old one for a desktop. Investing in a high-quality equipment can help you save money and safeguard your profits.

Dealing with the phone

Most online forex brokers allow you to place live transactions over the phone (albeit it's probably the least common method of trading). Before you can use it, you must first determine whether your broker provides this service and, if so, what its procedures are.

If you routinely trade while away from your computer or tablet, or in the event of technological outages, the ability to make transactions over the phone is essential. You

should have the dealing phone number in your contact list at the very least, as well as a solid phone connection in case your Internet connection fails. If your dog chews through your mouse cable or your child spills juice from a sippy cup on your tablet, you'll need a backup method to keep your market exposure safe. (In Chapter 13, we go through other risk factors.)

To make a deal over the phone, you'll need to do the following:

To place a deal, dial your broker's telephone number.

Identify yourself by name and provide your trading account number when you're connected to a representative.

Be prepared to provide any account passwords that are required. (It's a good idea to know what's required before calling to place the deal.)

You should be aware of your position. If you're unsure, your broker can provide you with this information, but expect delays.

Inquire about the current price of the currency pair you're dealing with. A two-way bid/offer price, such as "EUR/USD is trading at 1.3213/15," will be quoted by the broker's representative.

Say "No, thank you" if you don't want to pay the price.

If you want the price, be specific about the trade you want to make.

"Close my position" or "Square me up" aren't enough. Note the currency pair, the direction (buy or sell), and the quantity (don't use lots — use real numbers). "I'd like to sell 140,000 EUR/USD," for example.

"Done" or "That's agreed" should be the broker's next words.

Check with your broker to see if the trade you just completed was successful.

"To confirm, I just sold 140,000 EUR/USD at 1.3213," for example.

Make sure the trade is confirmed by the broker. By asking the broker to input the trade and update your position, you can double-check that the trade was correct.

In case you need to call back, get the name of the broker's representative with whom you just made the trade.

Orders

Orders are used by currency traders to capture market movements when they are not in front of their computers. Keep in mind that the forex market is open 24 hours a day, seven days a week.

A market move can happen while you're sleeping or showering just as easily as it can while you're watching your screen. If you're not a full-time trader, you probably have a full-time job that requires your full attention while you're at work — at least, that's what your boss hopes. Orders are a way to participate in the market without physically being present.

Orders are also frequently used by experienced currency traders to:

From entry to exit, develop a trade strategy.

Capture rapid, short-term price changes.

Limit your exposure to risk in volatile or uncertain markets.

Protect your trading capital from unwelcome losses.

Keep your trading discipline.

Profits should be protected, and losses should be kept to a minimum.

The importance of using orders in currency trading cannot be overstated. The foreign exchange market is notoriously volatile and difficult to forecast. Orders allow you to profit from short-term market movements while also limiting the impact of any negative price movements. A disciplined use of orders will also assist you in quantifying the risk you're taking and, hopefully, provide you with trading peace of mind. Bottom line: If you don't use orders, you're probably not trading with a well-thought-out strategy, which is a recipe for disaster.

Orders of various kinds

We'll go over all of the different types of orders available in the forex market in this section. Keep in mind that not all online brokers accept all order types. As a result, order types should be on your list of

questions to ask a potential forex broker. (In Chapters 13 and 14, we look at tactical considerations for placing orders and offer practical tips for entering orders, respectively.)

Orders with a profit margin

Isn't that a fantastic name? "You can't go broke taking profit," according to an old market adage. When you have an open position in the market, you'll use take-profit orders to lock in profits. If you're short USD/JPY at 107.20, your take-profit order will be to buy back the position and place it at a price below that, say 106.80. If you're long GBP/USD at 1.6640, your take-profit order will be to sell at a higher price, perhaps 1.6675.

Take-profit orders that only close a portion of your open position are known as partial take-profit orders. Assume you bought 200,000 EUR/USD at 1.2950 with the expectation that

it would rise — and it does. However, in order to take some money off the table and lock in some gains, you decide to sell half of your position (100,000 EUR/USD) at 1.3000 and leave the rest to the market to see how high it wants to go. Alternatively, you can use two partial take-profit orders to close the position at two different levels.

Orders are limited.

A take-profit order is a type of limit order in technical terms. Take-profit orders close or reduce open positions, whereas limit orders create new positions or add to existing positions in the same direction.

A limit order is any order that causes a trade to be executed at a price that is higher than the current market price. Consider the phrase "buy low, sell high." If the limit order is to buy, the price must be lower than the current market price. The limit order must be placed at a price higher than the current market price

if it is to sell.

Stop-loss orders are a type of stop-loss order that is

Boo! Doesn't it sound bad? Stop-loss orders are, in fact, essential for trading survival. The traditional stop-loss order does exactly that: it halts losses by closing a losing open position. Stop-loss orders will be used to limit your losses if the market moves against you. You're leaving it up to the market if you don't, and that's always a risky proposition.

Stop-loss orders are the polar opposite of take-profit orders, although they both move in the same direction (in terms of buying or selling). If you're long, your stop-loss order will be to sell, but at a lower price than what the market is currently offering. If you're short, your stop-loss order will be to buy at a price higher than the current market price.

Stop-loss orders that trail

A trailing stop is a wonderful tool to have, especially if you're on a winning trade. You may have heard that cutting lost positions immediately and letting winning ones run is one of the secrets to successful trading. You can do this with a trailing stop-loss order. Instead than trying to find the perfect level to exit on your own, you wait for the market to stage a reversal and take you out when you have a winning trade.

A trailing stop-loss order is one that is established at a fixed number of pips from the entry rate. The trailing stop modifies the order rate in the direction of your trade as the market price moves. If you're long EUR/CHF at 1.2350 and set the trailing stop at 30 pips, the stop will activate at 1.2320 (1.5750 – 30 pips) at first.

When it comes to stopping, don't lose, and when it comes to taking profits, don't profit.

The responsibilities of take-profit and stop-loss orders can sometimes be reversed. If you

alter your order levels after entering a position and the market has already moved away from your entry price, this can happen.

The relevant price in both take-profit and stop-loss orders is the current market price, not your entry price. For exam- ple, you may be short USD/JPY at 108.00 and the market is trading higher at 108.30. You originally had your take-profit order below to buy back at 107.60, but now you're having second thoughts. You decide to raise your take-profit order to 108.15 to try to close the position on a dip. The order is still a take profit because it is below the current market price (118.30), even though it will result in a loss if it's filled.

The same can apply to stop losses. If you bought AUD/USD at 0.7640 and the price has since moved higher to 0.7670, you may decide to raise your stop-loss sell order from its origi- nal level (0.7610) to lock in some of the gains. So you raise your stop-loss order to 0.7655. If your stop-loss sell order is

triggered, you'll actually be taking profit.

If the EUR/CHF price moves higher to 1.2360, the stop adjusts higher, pip for pip, with the price and will then be active at 1.2330. The trailing stop will continue to adjust higher as long as the market continues to move higher.

When the market puts in a top, your trailing stop will be 30 pips (or whatever distance you specify) below that top, wherever it may be.

If the market ever goes down by 30 pips, as in this example, your stop will be triggered and your position closed. So in this case, if you're long at 1.2350 and you set a 30-pip trailing stop, it will initially become active at 1.2320. If the market never ticks up and goes straight down, you'll be stopped out at 1.2320. If the price first rises to 1.2375 and then declines by 60 points, your trailing stop will have risen to 1.2345 (1.2375 – 30 pips) and that's where you'll be stopped out.

Pretty cool, huh? The only catch is that not every online trading platform offers trailing stops. If you find a platform you like and it doesn't offer trailing stops, you can mimic a trailing stop by frequently manually changing the rate on your regular stop-loss order. But this is an imperfect solution unless you can monitor your position constantly.

One-cancels-the-other orders

A one-cancels-the-other order (more commonly referred to as an OCO order) is a stop-loss order paired with a take-profit order. It's the ultimate insurance policy for any open position. Your position will stay open until one of the order levels is reached by the market and closes your position. When one order level is reached and triggered, the other order automatically cancels.

Let's say you're short USD/JPY at 101.00. You think if it goes up beyond 101.50, it's going to keep going higher, so that's where you decide to place your stop-loss buying

order. At the same time, you believe that USD/JPY has downside potential to 100.25, so that's where you set your take-profit buying order. You now have two orders bracketing the market and your risk is clearly defined.

As long as the market trades between 100.26 and 101.49, your position will remain open. If 100.25 is reached first, your take profit will trigger and you'll buy back at a profit. If 101.50 is hit first, then your position is stopped out at a loss.

OCO orders are highly recommended for every open position.

Contingent orders

A contingent order is a fancy term for combining several types of orders to create a complete currency trade strategy. You'll use contingent orders to put on a trade while you're asleep, or otherwise indisposed,

knowing that you're contingent order has all the bases covered and your risks are defined. Contingent orders are also referred to as if/then orders. If/then orders require the If order to be done first, and then the second part of the order becomes active, so they're sometimes called If done/then orders.

Let's look at a trade idea and see how a contingent order works. Say NZD/ USD has been trading in a range between 0.6700 and 0.6800 and is currently sitting in the middle at 0.6750/54. You think it's going to go higher, but you don't want to jump in at the middle of the range and risk watching it go down before it goes up. So you use a contingent order to implement your strategy, even if you're not watching the market.

Because you're ultimately looking to buy on a dip toward 0.6700 to get long, you would place an if/then limit order to buy at 0.6710, the if part of the order. If the if component of

the order is triggered and you enter a position, the contingent, or then, part of the order becomes active.

The then section consists of either a stop-loss order or a take-profit order, or both in the form of an OCO order.

In this situation, your backup plan might be to put a stop-loss order below 0.6700 in case the range breaks and you're wrong. As a result, you can sell what you bought in the if part by placing a stop-loss order at 0.6690. An if/then stop loss order is a form of dependent order. If you just want to limit your downside risk while letting your upside gains flow, you can use an if/then stop-loss order.

If you believe the upside is confined to the range highs at 0.6800, in addition to your stop-loss order, you may wish to add a contingent take-profit order at 0.6790 to sell what you acquired at 0.6710. You now have an OCO order to stop sell at 0.6690 or take

profit at 0.6790 if your trade was launched at 0.6710. You now have a complete trade plan with risk parameters that you can control.

If the market stays in the range, it could dip below the level you saw before going to bed (0.6750/55). If it reaches 0.6710, you've established a long position and your OCO orders are active. Your take profit at 0.6790 may be triggered if the range holds and the price climbs back up to the range highs. Your stop-loss order will limit your losses and close out your trade for you if the range fails to hold.

When utilizing if/then orders with simply a contingent take-profit order, be cautious. It's never a good idea to trade without a stop loss in place to protect your losses. To keep your risks to a low, always apply an if/then stop loss.

If you utilize an if/then OCO order and the market behaves as expected, you can wake up to find that you bought at 0.6710 and took

profit (sold) at 0.6790 while you slept. Alternatively, you might wake up to find that your purchase order was completed, but the market has not yet reached your stop-loss or take-profit levels. At the very least, the activated OCO order protects your open position. In this example, the worst-case scenario is that you wake up to find that your if limit order was filled and your stop was triggered on a break through the range's bottom, resulting in a loss. The important thing is that you controlled your risk well.

Online currency trading spreads and orders

Now that we've reviewed the various order types, we believe it's critical that you understand how online trading platforms normally handle trader orders. We talked about forex market spreads and the job of the market-maker previously in this chapter. There was an excellent explanation for this: Online forex brokers accept orders based on their trading policies, which are detailed in the fine print of the contract you'll have to

sign to start an online trading account. Make sure you read that section to understand your broker's order execution policies in detail.

The most common aspect of most brokers' order rules is that your orders are executed based on the trading platform's price spread. That is, your purchase limit order will only be filled if the offer price on the trading platform meets your buy rate. Only if the trading platform's bid price reaches your sell rate will a limit order to sell be triggered.

Let's imagine you have an order to purchase EUR/USD at 1.2855 and the EUR/USD spread at your broker is 3 pips. Only if the platform's price is 1.2852/55 will your buy order be fulfilled. If the lowest price is 1.2853/56, you're out of luck because the broker's lowest offer of 56 never met your 55-percentage-point purchase rate. The same thing happens when selling limit orders.

Because most online forex brokers promise that your stop-loss order will be executed at

the order rate, stop-loss execution policies differ slightly from those in stock trading. Brokers rely on the spread to be able to ensure this.

If the broker's bid price hits your stop-loss order rate, stop-loss orders to sell are triggered. To put it another way, if your sell stop-loss order is at 1.2820 and the broker's lowest price quote is at 1.2820/23, your stop will be filled at 1.2820.

If the platform's offer price approaches your stop-loss rate, stop-loss orders to buy are triggered. If you place a buy stop order at 1.2875 and the broker's high quote is 1.2872/75, your order will be completed at 1.2875.

The advantage of this method is that certain providers will guarantee that your stop-loss orders will not slip during typical trading conditions. (A broker will rarely, if ever, guarantee stop losses when economic reports are released.) The disadvantage is that your order will most likely be executed before

stop-loss orders in other markets, so you'll need to leave some room when setting them on your forex platform.

In Chapter 13, we go deeper into the complexities and techniques of trading with orders.

THE FORCES THAT DRIVE CURRENCIES

FOREX.com/Bloomberg/Bloomberg/Bloombe

In a free essay at www.dummies.com/extras/currencytrading, you may learn how to trade forex alongside other asset classes.

In this section...

Learn about the primary factors that influence currency rates.

Investigate the economic and structural

factors that drive currencies to fluctuate.

Create a framework for deciphering market data and removing market noise.

Understanding central bank actions and how changes in monetary policy affect the currency market is essential.

Learn how to assess risk sentiment and why it is important to the markets.

EXAMINING THE BIG PICTURE

Getting to know the primary factors that influence currency rates

Keeping an eye on monetary policy and interest rates

gaining a better understanding of governmental monetary policies and intervention

Getting a sense of risk and financial stability

Inherently, the FX market is a big-picture

market. Traders in foreign exchange concentrate on

Changes in interest rates and monetary policy.

Data on economic growth and inflation.

In major economies, political elections and economic policies are important.

Geopolitical dangers, trade wars, and terror strikes are all on the rise.

Other financial markets have seen significant changes.

Currency traders must sort through a plethora of economic reports on a daily basis, evaluate the remarks of political and financial figures from all over the world, appraise geopolitical developments, and estimate movements in other financial markets. All of this is done to

assist them in determining which way major currencies are likely to move.

Unfortunately, there is no one-size-fits-all approach to digesting the daily influx of facts and news and producing a definitive answer. Even if there were, many different market participants are pursuing their own goals, which may or may not be profitable (see Chapter 3).

When you add in market sentiment and future expectations, you have market players reading the same facts and coming to different conclusions, or perhaps coming to the same conclusions at different periods. This chapter lays the groundwork for constructing a framework to make sense of the numerous policy, data, and news inputs that affect forex markets on a daily basis.

Because interest rates and monetary policy are the end product of most of the other inputs, getting a handle on them is the first

step in creating the foundation. Following monetary policy developments is probably not one of your favorite pastimes unless you're an economist or banker. However, if you want to actively trade in the currency market, you'll need to learn about mon-

Interest rates and monetary policy We're not attempting to transform you into an economist or an interest-rate analyst; instead, we'd like to provide you with an overview of how interest rates affect currencies.

We lay it all out in this chapter so you can understand how it works, what goes into it, and how it's conveyed to the market. We'll get into the fundamental features of official currency policies and what occurs when governments intervene in FX markets later in the chapter. Finally, we examine the lessons learned from the Great Financial Crisis of 2008–2009 (GFC) for currency trading.

Interest Rates and Currencies

If "location, location, location" is the leading principle in real estate, "interest rates, interest rates, interest rates" is the main principle in currency trading. The kind and direction of monetary policy set by a country's central bank is the most important overall predictor of a currency's value relative to other currencies.

When we say "monetary policy," we're referring to changes in a country's central bank's policies, such as interest rate changes and the implementation of quantitative easing, among other things.

The most significant thing a central bank performs in the FX market is establish domestic interest rates, which have an impact on the overall market activity in the economy Lower interest rates tend to encourage borrowing, investment, and consumption, whereas higher rates tend to discourage borrowing and favor saving over consumption.

Interest rates are crucial to currencies because they influence global capital flows and serve as benchmarks for what investors may expect to earn by investing in a specific country. This condition affects fixed income assets (bonds), which account for the majority of investments, but it also affects equity and other investment flows.

If all other factors were equal, would you prefer to invest in a government-backed bond with a yield of 6% or one with a yield of 2%? Of course, the one with the highest yield. That is precisely what occurs with currency. Currency yields (interest rates) that are greater tend to rise, whereas currencies with lower yields (lower interest rates) tend to fall.

Interest rates are one of the key drivers of currency rates, but they are not the only factor that influences currency values. There are other more factors that influence currency rates, both in short-term trading and long-term trends.

Consider the stage at a theater as an example. Consider the backdrop and lights on that stage to be interest rates. Actors come and go, and sets and props change between acts, but all of the action on stage takes place against a backdrop and under the spotlights. Even if they aren't always the focus of attention, interest rates provide the backdrop and set the tone for most big currency swings.

The future has arrived: Expectations for interest rates

The current level of interest rates isn't the only factor to consider. Markets are always adapting to shifting conditions and predicting future events. When it comes to currencies and interest rates, forex markets are more concerned with the direction of future interest rate movements (higher or lower) than with present levels because the market has already factored them in. Even if a currency's interest rate is modest, market expectations of rising interest rates in the future often drive the

currency to gain.

What factors influence interest rate expectations? The changing economic outlook based on incoming data (we look at understanding and interpreting economic data in Chapters 6 and 7), monetary policymakers' economic assessments and guidance (see the section "Watching the Central Bankers" later in this chapter), and a slew of other economic, fiscal, and political developments (some of which we look at later in this chapter).

Keep an eye on interest rate futures markets, such as the Fed Funds futures contract for US rates, to see what expectations are being priced in. Financial websites such as Bloomberg.com, Reuters.com, and Marketwatch.com have these. Markets have priced in 18 basis points of tightening at the next FOMC meeting, implying that the market expects a 72 percent likelihood of a 25 basis point rate hike (18 bps/25 bps= 72 percent).

The outlook period, or the time frame in which markets expect interest rates to move, can range from a few months to several quarters. Markets may price in interest rate adjustments a full year in advance, influencing short term yields and currency levels in the process, depending on the economic circumstances and forecast. Following that, currency and yield swings are depending on incoming data and official guidance in relation to market expectations.

Interest rates relative to each other

It's crucial to keep in mind that currencies are always sold in pairs. Instead of focusing merely on a currency's interest rate level or forecast, forex markets tend to concentrate on the potential difference between two currencies' future interest rate fluctuations. There's little incentive for one major currency to outperform the other if both central banks are forecast to raise rates by the same amount in the future. However, if one currency is predicted to hike rates faster or higher than the other, there are reasons for one currency

to rise against the other.

After the main global central banks all kept interest rates near record lows in 2014, forex market volatility plummeted to new lows. The market was waiting for some divergence in interest rate policy to cause a bout of volatility in the FX market at the time of writing. This serves as a good reminder that interest rates are a major driver of the currency market.

Differentials in interest rates

The interest-rate differential or spread, which is the difference between the two currencies' interest rates, is the essential rate to keep an eye on. A rising or widening interest rate disparity favors the higher-yielding currency, while a decreasing or narrowing interest rate gap favors the lower-yielding currency.

When two countries' interest rate cycles are moving in different directions, or are assumed to be moving in opposite ways,

some of the greatest currency fluctuations occur. And they don't have to be moving in the same direction — one currency's rates could be expected to rise or fall while the other's remain unchanged. You can spot such shifts more easily by focusing on the interest-rate differential rather than the rates of any one currency.

Traders should keep an eye on interest rate differentials between major currencies by looking at the spreads between short-term government bond rates to notice moves that might not be obvious otherwise. It's worth emphasizing that, unlike, example, the actual level of interest rates stated by a central bank, the government bond market tends to price-in predicted changes in interest rates, allowing it to provide a more up-to-date picture of what the market is thinking about rates.

For example, U.S. 2-year yields may fall by 5 bps (basis points, or one-hundredth of one percent) on a daily basis, which is not unusual. Around the same time, Australian 2-

year yields may rise 5 basis points – nothing to write home about on its own. However, when you combine the two, you're looking at a 10 bps difference between the two, which is worth noting. If the same thing happens the next day, you're looking at a 20 basis point move in the differential, which is roughly similar to a central bank interest rate change of 25 basis points. You may rest assured that if the Reserve comes into play, it will be a force to be reckoned with

There would be very big swings in AUD/USD if the Bank of Australia (RBA) abruptly hiked interest rates by 14%, or if the Fed stunned everyone by reducing rates by 14%. Changes in interest-rate differentials are similar, and they happen on a daily basis rather than at monthly meetings of most central banks.

Interest rates, nominal and real

The interest rate to pay attention to isn't always the nominal rate (the base interest

rates you see, such as the yield on a bond). The focus of the markets is on real interest rates (inflation-adjusted rates, which is the nominal interest rate minus the rate of inflation [usually consumer price index]). So, while a bond may have a nominal yield of 8.5 percent, if the country's annual rate of inflation is 4.5 percent, the actual return on the bond will be closer to 4 percent.

This effect is especially visible in hyperinflationary developing market economies. Even though nominal interest rates are 20%, if yearly inflation is 25%, the actual yield is only 5%. Capital flight is triggered by hyperinflation and negative yields. Even if nominal interest rates may be exceedingly high, the outcome is tremendous weakness in the home currency.

The same can be said for extremely low interest rates and deflation (negative inflation), as Japan experienced between 2000 and 2013. Real Japanese yields were substantially greater than the nominal zero

rates on offer, with interest rates at historic lows, eventually zero, and the country facing deflation. (Keep in mind that subtracting a negative integer is equivalent to adding a positive number.) As a result, despite relatively low nominal rates and bleak economic forecasts, the JPY appreciated overall during this period.

In the parts that follow, we'll go over the key objectives of monetary policy, walk you through monetary policymakers' toolkits, and show you how to stay on top of the changing interest rate landscape.

The Basics of Monetary Policy

The set of policy actions used by central banks to achieve their legislative mandates is known as monetary policy. The majority of central banks are guided by legislative mandates that have two main goals:

Maintaining pricing stability is a priority

(a.k.a. restraining inflation)

Promoting long-term economic growth, often with the specific objective of increasing employment.

Despite the fact that it is self-evident that fostering economic growth is more vital to those of us who work for a living, central bankers prefer to concentrate on inflation. Because low inflation promotes stable business and investment environments, central bankers believe it is the most effective strategy to support long-term economic growth.

Because excessive inflation erodes asset values and inhibits capital accumulation, low inflation is also a goal in and of itself. Some central banks, such as the Federal Reserve of the United States, have a dual mandate of price stability and maximum employment. Other central banks, such as the European Central Bank (ECB), have only one mandate: to maintain price stability, with other policy

objectives (growth and employment) specifically designated as secondary.

Other central banks, such as the Swiss National Bank, have a mandate to maintain currency stability, while most governments have outsourced this function to the finance ministry or treasury department.

Examining interest rates that are used as a benchmark

Changes in benchmark interest rates, such as the federal funds rate in the United States or the refinancing rate in the Eurozone, are the key tool for monetary policy. Interest rate changes essentially modify the cost of money, with higher interest rates increasing borrowing costs and lower interest rates lowering borrowing costs.

The cost of borrowing between banks is determined by the benchmark rates set by central banks, which apply to the nation's banking system. Based on these benchmark

rates, banks modify the interest rates they charge corporations and individual borrowers, affecting domestic retail borrowing costs. Other tools in central bankers' monetary policy toolset include:

Quantitative easing (QE) is an unorthodox monetary strategy in which central banks buy financial assets from commercial banks and private institutions in order to enhance asset prices and cut rates while increasing the monetary base. Following the financial crisis, major central banks began quantitative easing (QE) initiatives in order to try to bolster their economies This includes purchasing government and corporate bonds in order to reduce bond yields and increase lending.

Reserve requirements: The amount of capital that the banking system is required to hold aside; money that cannot be utilized for lending.

Money that is easy to come by and money that is scarce.

The basic thrust (or bias, as markets refer to it) of monetary policy can be classified as either expansionary or restrictive. A restrictive bias attempts to reduce economic growth, usually to combat inflation, while an expansionary bias aims to promote or stimulate economic growth.

Monetary policy that is expansionary

Lowering interest rates is often used to implement expansionary monetary policy (also known as accommodating or stimulative monetary policy) (that is, reducing the costs of borrowing in the hope of spurring investment and consumer spending). Cutting interest rates is also known as easing interest rates, and the term "loose monetary policy" is often used to describe it. Central banks can also boost the money supply, or the total amount of money in circulation, lowering borrowing costs. A reduction in banks' reserve requirements frees up capital for lending, increasing the money supply while also lowering borrowing costs.

When economic growth is slow, flat, or decreasing, and unemployment is rising, an expansionary monetary policy is used. The major nations' central banks reacted to the aftermath of the global financial crisis and the global recession by lowering interest rates to historically low levels, near zero in the case of the US, Switzerland, and Japan.

Monetary policy restraint

Interest rates are raised, or "tightened," to accomplish restrictive monetary policy (also known as contractionary or tighter monetary policy). Higher interest rates raise the cost of borrowing, causing governments to cut back on spending and investment in order to impede economic development and minimize inflation.

When an economy is thought to be growing too quickly, central banks usually tighten monetary policy. The central banker's concern is that increased demand combined with cheap borrowing costs may lead to

inflation levels that are unacceptably high for an economy's long-term viability. When there is too much money pursuing the same or few things, prices rise, and inflation emerges. Rapid pay increases, for example, may lead to greater personal consumption, raising the price of a wide range of retail goods.

Gradually altering rates

Because central bankers are generally hesitant to shock an economy by changing interest rates too drastically, monetary policy changes normally include several minor moves in interest rates. Even the possibility of a high amount of interest

Changes in interest rates could increase investor and corporate uncertainty, thereby disrupting or delaying well-laid business plans, damaging the general economy and potentially increasing unemployment. The main central banks' most common interest rate changes are 14 percent or 25 basis points (a basis point is 1/100th of a percent, or 0.01

percent), with 50 basis points (or 12 percent) being the second most common rate adjustment.

Key central banks slashed rates in response to the global financial crisis and the ensuing global recession, with cuts of 75 to 100 basis points coming in quick succession in some cases. Following the near-zeroing of interest rates, several major central banks felt obligated to implement extra unconventional easing measures, such as quantitative easing (QE), to assist their economies.

Unusual methods of alleviating

Only central banks have direct control over short-term interest rates. Bond investors establish longer-term interest rates, which are utilized by markets to set business and consumer lending rates, based on their views on growth, inflation, and creditworthiness. For instance, the

The year U.S. Treasury rate serves as the

benchmark for mortgage rates in the United States.

Central banks were confronted with the zero-lower bound of interest rates when they dropped their benchmark rates to near-zero levels. They attempted to lower longer-term loan rates by unconventional techniques, such as large-scale asset purchase programs in which the central bank buys longer-term government bonds, to further assist their economies. (Keep in mind that bond prices move in the opposite direction of bond yields - it's simple bond math.) Buying longer-term bonds should ideally push bond prices higher and yields lower, lowering consumer and corporate loan rates in the process.)

Because the central bank is boosting the money supply, or quantity, by creating money to buy bonds, such large-scale asset purchase programs are commonly referred to as QE. The Federal Reserve launched two rounds of quantitative easing in the United States, while the Bank of England and the Bank of Japan

launched large-scale asset purchase programs in the United Kingdom and Japan, respectively. (Japan has used quantitative easing (QE) several times in the previous decade, far before the GFC.)

Currencies of countries adopting unconventional easing tend to weaken since such policies may lower interest rates relative to those of other countries, at least while the program is in place. An increase in the money supply is also seen as a currency negative by certain investors (the greater the supply, the lower the value). However, this isn't always the case, particularly if the additional cash leaks out of the economy and into other markets, as it happened in the United States in 2009.

A classic illustration of this was when the Federal Reserve of the United States announced in August 2010 that it was exploring a second round of quantitative easing, dubbed QE2. The dollar initially fell as the Fed appeared to be attempting to

decrease rates even further. When the real program was announced, however, the dollar began to strengthen and US rates began to rise. It appeared to be a case of "sell the rumor, buy the fact," but it was actually in response to recent data from the United States and the immediate outlook: In reaction to a downturn in the economy, the Fed was considering QE2.

However, by the time QE2 began in November 2010, U.S. data and the outlook had improved. And what about all that supposedly printed money by the Fed? It primarily went back to the Fed as excess reserves held by the banking system, implying that it never made its way into the real economy.

Keeping an eye on the central bankers

If you've read this chapter all the way through, you've probably received the sense that monetary policy is more of a gray area than a black-and-white calculation — and

you'd be correct. However, given the importance of monetary policy to currencies,

Traders spend a lot of time attempting to figure out what central bankers are thinking. This hasn't always been straightforward, but recent efforts by central banks to improve the openness of their communications with markets, sometimes known as transparency, have made it less of a guessing game.

Central bankers engage with the markets in a variety of methods, and their remarks have the potential to cause market reactions akin to big economic data releases — that is, sharp initial price changes followed by sustained volatility or a possible shift in direction.

Interest-rate setting committees of central banks meet on a regular basis to make rate decisions. They issue a formal announcement of the policy decisions made at the meeting at the end of the meeting. They have the power to raise, reduce, or maintain interest rates. Changes to reserve requirements or liquidity

operations are also possible.

Policy statements or guidance: Central banks frequently provide an accompanying statement that outlines the basis for their policy move, along with their interest rate decision. These statements are also used to provide market indication on the direction of monetary policy in the future. Markets scrutinize the statements, trying to figure out what the central bank is thinking, which way it is leaning, and when future changes could occur.

In recent years, a press conference by the central bank's chairman has often preceded rate releases. Following certain of their meetings, the Federal Reserve and the European Central Bank both hold news conferences. Economic data/event calendars contain rate announcements and accompanying policy pronouncements.

Public speeches: Central bankers routinely lecture community and corporate

organizations on topics ranging from financial industry developments (such as the rise of hedge funds or the usage of derivatives) to monetary policy from complex derivatives to seemingly insignificant governance issues (such as financial reporting requirements). When a central banker gives a statement about the economy or the future course of monetary policy, however, currency markets pay attention.

Most economic event/data calendars include appearances by central bank officials, and you should be aware of them to prevent being caught off guard. The topic of the speech is sometimes provided in advance, and other times it is not. The remarks that focus on the economic forecast or the present monetary policy assessment are the most relevant.

Financial newswires typically release a prepared text at the scheduled start time of the speech. Accredited news organizations receive advance copies of speeches so that their reporters can prepare stories and

headlines, but the information is not released until the appointed time.

The statements are then condensed into a series of headlines that summarize the speech's main elements; this is the information that markets receive at the scheduled time. Market prices begin to react when these headlines appear on traders' screens.

If a question-and-answer session follows, the central banker's remarks will be broadcast live on the newswires. This setup could lead to some fantastic headline-driven trading opportunities.

Because of the strong correlation between interest rates and currency values, currency traders must be aware of and regularly follow current market thinking on interest rate direction. The simplest method to do this is to read market remarks in print and online news sites, but keep in mind that these venues (especially print) are typically one step

behind the current market.

This increases the relevance of online news commentary. Bloomberg.com, Reuters.com, and MarketWatch.com are some of the greatest sites for current market insights and news. Twitter is a terrific way to keep up with the newest central bank news. Best of all, for the time being, the majority of these sites are free.

Look for currency brokers who provide real-time market updates and market analysis.

In the next section, we'll look at how central bank officials communicate monetary policy to financial markets. We also look at policies and rhetoric relating to specific currencies. It's sometimes more essential how a message is delivered or who delivers it than the message itself. This is unquestionably correct.

statements from central bank or government

finance officials on monetary or currency policy

Using monetary policy communications to make sense of them

We discussed the many ways in which central bankers convey their ideas to market participants earlier in this chapter (see the preceding sec- tion). However, depending just on formal policy declarations or speeches before the Rotary Club of Indianapolis is significantly less complex and evolved. Central bankers are well aware that their words can have a significant impact.

Financial markets all over the world are being moved, and potentially disrupted. As a result, they carefully chose their words, leaving traders to function as interpreters.

It will assist to understand the following before you begin understanding monetary policy announcements and discussion.

Central bankers are not all created equal.

Central bank interest rate-setting committees, often known as Monetary Policy Committees (MPCs) — the Fed's FOMC is one of them — usually operate on a one-member/one-vote basis. When it comes to communicating with the markets, however, the chairman or president of the central bank, as well as his or her deputies, wield significantly more power than any other individual member. This is partly due to the central bank chief's status as the first among equals, but it's also because that individual is frequently seen as representing the entire committee's viewpoint. When it comes to making choices, central bankers strive for consensus, and who better to represent and explain this point of view than the chairman or president?

Pay attention when the head of the central bank offers an update on the economy or discusses the outlook for interest rates. A speech by the Fed's chair, for example, is likely to be followed by market speculation similar to that surrounding a significant

economic data release. And the backlash to his remarks can be just as vehement.

The FOMC, in the case of the Fed, is made up of 12 voting members, including the board of governors and a rotating slate of regional Federal Reserve Bank presidents. So, before acting on what a Federal Reserve Bank president has to say, make sure you know if she's a voting member in the current year.

Traders usually discount or ignore comments made by nonvoting FOMC members because the speaker will not be voting at the next meeting. However, this is an oversimplification that can be dangerous. You should analyze a nonvoter's comments in the context of the FOMC consensus before dismissing them. Is she presenting her own opinions or elaborating on a change in popular opinion?

Hawks and doves are feathered friends.

Market watchers and traders are usually

familiar with central bank officials, either as a result of previous policy comments or their academic or policy papers prior to becoming central bankers. Central bankers are commonly referred to be hawks or doves by the markets. A hawk is someone who takes a more aggressive strategy to combating inflation and isn't afraid to raise interest rates even if it hurts economic growth. A dove, on the other hand, is a central banker who favors pro-growth and employment monetary policy and is hesitant to raise interest rates if it may harm the economy. In short, hawks focus on battling inflation, and doves focus on growth and employment.

Don't get us wrong: there are plenty of central bankers who can wear both hats in the middle (or feathers, in this instance). Middle-of-the-roaders tend to disclose their hawkish or dovish leanings only at the extremes of policy cycles in these circumstances.

So, if a hawk is scheduled to speak about the outlook for monetary policy and mentions

inflationary risks or the need to avoid any increase in inflationary pressures, guess what? The markets aren't going to react much since he's a well-known figure speaking in his usual manner. When a hawk downplays the threat of inflation or suggests that inflationary pressures are beginning to ease, the reaction is significantly stronger. Markets will react strongly to dovish statements from hawks, and vice versa with hawkish ones from doves.

Rhetoric and Official Currency Policies

Government actions or official attitudes on the value of individual currencies have a significant impact on currency values. Official policies and international agreements among the major industrialized economies have caused some of the most significant swings in currency values in recent decades. For example, the Plaza Accord of 1985 is seen as a turning point in forex market history, as it resulted in a 50 percent depreciation of the US dollar over the next two years.

When it comes to the value of their currencies, national governments have a lot riding on it. After all, a country's currency is, in some ways, the front door to its economy and financial markets. It's the equivalent of slamming the front door shut if the currency is perceived as unstable or overly volatile. And no big economy today can afford to do so.

We'll look at the key goals of national currency policies, who establishes them, and how they're implemented in this part.

Is it better to have a currency policy or a currency stance?

It's possible that referring to official government currency thinking as currency policy is a mischaracterization. Instead, think of it as a position on specific currency values at a specific point in time.

The FX market's daily trade volumes dwarf

most national central banks' currency reserve holdings. (Currency reserves are central banks' amassed stockpiles of international currencies for use in market interventions and overall reserve management.) Central bank currency reserves in Japan and China total more than $2 trillion. That may appear to be a difficult task.

The average daily amount of currency trading in the global FX market is approximately $4 trillion. This means that even if national governments intended to control the value of their currency on a regular basis, they would have a hard time doing so if market forces were at war with official policy.

To summarize why governments are often hesitant to intervene in currency value manipulation, consider the following:

They are unable to do so due to their modest size. The forex market is far larger than any

single country's foreign exchange reserves.

They are unable to do so due to market structure. Foreign exchange markets operate outside of national borders.

They can't come to an agreement on what to do. On the other side of the currency pair, there is always another country or countries. You may desire a weakening of your currency, but do others desire a strengthening of theirs? It is not possible for everyone to have a weak currency.

They are not interested in interfering with the free market. Interfering with international financial flows is a recipe for economic disaster, as well as diplomatic unrest in some situations.

Governments, on the whole, prefer not to get involved in setting currency rates or attempting to influence global currency direction.

They know that their power is extremely restricted and that it must be utilized sparingly, usually only when extreme circumstances necessitate national government or multi-government intervention. Furthermore, the world's economic heavyweights trust in the ability of free markets to allocate capital efficiently and maximize long-term economic potential. It's that simple.

It wouldn't do for them to openly oppose free-market ideals by attempting to manipulate currency values on a regular basis. If you don't live what you preach, you'll lose your audience. For governments, this translates to trustworthiness, which is a quality that most want to promote and defend.

However, governments do attempt to influence currency rates from time to time, and this is a huge but. When they do, it's usually a significant long-term shift in currency values.

The next part examines the main players in each country or currency zone, as well as what their recent currency activities say about their currency policy objectives.

Having the last say on currency

We listed a variety of reasons why national governments are hesitant to intervene in the value of their currencies in the "Currency policy or currency stance?" section earlier in this chapter.

The scale and scope of the global FX market, as well as the necessity for nations to agree on whether or not adjustments are even necessary, are among the most pressing issues. The Group of Seven (G7) was once the primary forum for discussing currency concerns, but globalization has brought more economies to the table in the shape of the Group of Twenty (G20). (At the end of Chapter 3, we list the membership of the G7 and G20.) With a larger group of competing

national interests in the G20, collective currency action appears to be less possible.

If governments had their way, fixed exchange rates would supplant floating rates and completely sidestep the issue, but it isn't a realistic option for the foreseeable future. When confronted with the realities of forex markets, most government currency authorities go to considerable efforts to avoid discussing currency values for fear of their remarks being misinterpreted and resulting in significant exchange rate swings. That apprehension is based on past experience, and today's top currency authorities are far more subtle than their forefathers just a few decades ago.

In countries with the most heavily traded currencies, the finance ministry or central bank is usually in charge of currency concerns. In the parts that follow, we'll look at who's in charge of creating and enforcing currency policy in the five major currencies, as well as their main reasons.

The United States of America

The Department of the Treasury is responsible for all aspects of currency management, from printing notes and minting coins to preserving the dollar's soundness in international markets. The U.S. dollar's chief spokesman is the Secretary of the Treasury. The deputy Treasury secretary for international affairs is the Treasury official who deals with currency issues on a daily basis.

FX markets pay attention when the US Treasury Secretary speaks about the value of the dollar, or any other currency for that matter.

The Eurozone is a European currency union.

Under the accord that created the single-currency Euro in 1999, the European Central Bank (ECB) is in charge of both monetary

policy and currency concerns. The ECB's governing council is the main decision-making body; it is made up of the presidents of the member countries' central banks, with the ECB president serving as the group's leading policymaker and spokesman.

When the ECB needs to interfere in the market, it can do so alone or with the help of the member countries' central banks. Global central banks interfered in the early years of the EUR to prop up the newly established currency; however, there has been no official involvement in the EUR in recent years.

Individual European countries, on the other hand, continue to have a say in currency policy through their finance ministers, who were in charge of currencies previous to the euro's adoption and the establishment of the ECB. The Eurozone finance ministers meet on a regular basis and discuss FX market developments often. With the two largest European economies — Germany and France

— markets still appear to give the member states' governments a lot of thought when it comes to currency values.

France is the country with the most clout. However, it appears that consensus is the most important factor in determining whether the euro is too strong or too weak, and that a clear majority of member states must agree to oppose market movements before the market will pay notice.

The European Central Bank is primarily concerned with combating inflation and achieving currency stability as a method of promoting long-term economic growth.

Despite the fact that Europe is primarily export-oriented, and severe euro strength is a danger factor for the Eurozone economy, the ECB has resisted intervening in the FX market thus far.

Japan

In Japan, the Ministry of Finance (MOF) is in charge of currency concerns. The Ministry of Finance (MOF) is Japan's most powerful government ministry, with more clout in economic matters than the central bank, the Bank of Japan (BOJ). The JPY's value receives a lot of attention from the MOF. The deputy minister for foreign affairs is the MOF's primary currency spokeswoman on a day-to-day basis, however the finance minister will frequently deliver statements during periods of volatility. It's not unusual for the MOF to make daily remarks on the forex markets, especially when JPY volatility rises. The MOF last intervened (see following part) in September 2010, when the JPY was strengthening and the USD/JPY was threatening to go below the crucial support level.

When the Federal Reserve prepared for a second round of quantitative easing In the aftermath of the 2011 tsunami, the Japanese government, together with the world's main central banks, intervened in the JPY. The yen

soared as a result of safe-haven flows, but action was required to restrict JPY strength and aid in the recovery of the Japanese economy following this horrific tragedy.

Because Japan's economy is still heavily reliant on exports, the JPY's value is critical to export competitiveness and business profitability. Excessive JPY strength, which raises the cost of exports overseas and reduces profits from international sales, is usually the catalyst for the MOF to express concern and possibly intervene in the market.

The United Kingdom

The Chancellor of the Exchequer (also known as the Treasury Secretary or Finance Minister) is in charge of the British pound's fate. In a twist, the governor of the Bank of England (BOE) is also responsible for the pound a relic of the BOE's independence from the government in 1997.

Because the majority of UK commerce is handled with the Eurozone, the chancellor/BOE normally keeps out of currency problems and appears to be mainly concerned with the pound's exchange rate vs the euro.

Although the UK is strongly tied with European economies and would be a candidate to join the Eurozone single currency, nationalism is a strong factor in the decision to abandon the pound. The official government line is that no decision on euro membership will be made without a national referendum.

Switzerland

The Swiss National Bank (SNB) is responsible for the Swiss franc as well as establishing monetary policy. Because roughly 80% of Swiss commerce is conducted with Eurozone countries, the SNB is particularly worried about the Swiss franc's

exchange rate versus the euro. When the EUR/CHF currency rate approaches extreme levels, the SNB has been known to speak out against CHF strength or weakness. During the debt crisis in the Eurozone,

In late 2009–2010, the EUR fell dramatically against the CHF, prompting the SNB to intervene many times in an attempt to counteract CHF strength, but with no result.

The SNB, on the other hand, took the rare step of pegging the EUR/CHF rate at 1.20 in 2011. The SNB is still completely committed to this peg at the time of writing. The SNB is ready to act whenever the EUR/CHF rate reaches 1.20 in order to prevent it from sliding below this level and limiting CHF strength.

The market has taken the SNB's word for it, and the EUR/CHF rate has only gone below 1.20 on a handful of occasions since 2011. This is a unique situation; normally, involvement occurs only for a limited time or

in reaction to a national calamity or economic crisis.

Examining currency market intervention in greater detail

There is a direct line to the central bank's open market trading desk in every big-bank currency trading room in major financial cities. The entire dealing room erupts when that line lights up. That line is reserved for the central bank's open market intervention, and if it rings, it usually signifies one thing: the central bank is intervening in the market.

Intervention refers to central banks purchasing or selling currencies on the open market in order to manipulate currency prices in their favor. Direct market intervention is normally only used as a last option. It might also be a stopgap measure to help calm markets that have been thrown off by major events like a stock market crash or a natural disaster. Markets are generally aware of the increasing hazards of intervention when it is

not required by emergency situations.

Several less-blank kinds of official action frequently precede open market intervention. From the government's perspective, the goal is to obtain the most bang for the buck before investing actual money. Keep in mind that central banks have limited firepower in comparison to the broader market, so they must choose their battles carefully. The government's actions can be deceiving at times.

The goal is to just halt a market move in order to restore financial market stability, and less drastic intervention is not yet required. The following are some of the more subtle ways of intervention:

Verbal intervention, often known as jawboning, is when officials from the finance ministry or the central bank publicly suggest that current market trends are unfavorable. Essentially, it entails attempting to inflate or

deflate the value of a certain currency. For instance, if the Japanese Ministry of Finance (MOF)

If the Japanese government is serious about limiting additional JPY strength in order to protect its export sector, but the USD/JPY rate continues to fall, senior MOF officials may declare that "excessive exchange rate swings are undesirable." This letter is a warning to currency traders to cut back on their USD selling and increase their JPY buying or face the consequences. If the market ignores the warning, the MOF may go even further and say it's "closely watching exchange rates," which is usual wording used before genuine open market intervention.

Checking rates: This is the central bank's open market desk, which is connected directly to the trading desks of major currency institutions. The traders are unsure if the intervention will be real or not, but they react intuitively based on previously stated preferences. Even speculations of a central

bank reviewing rates might cause significant market volatility.

There are various distinct types of open market intervention that can be used, depending on which and how many central banks are involved. The more the merrier, and there's even more power in numbers.

Unilateral intervention: When a single central bank, such as the SNB, buys or sells its own currency, this is known as unilateral intervention. Because the government is seen (usually correctly) to be acting alone and without the cooperation of other major governments, unilateral intervention is the least successful form of intervention. After the intervention has run its course, markets will often revert to the previous direction to test the central bank's commitment and determine if it is intent on stopping or simply slowing the advance. The MOF/BOJ intervention in the fall of 2010 was a one-off, and it failed to stem the tide of JPY strength.

Even though it is working alone, the Swiss authorities have been successful in pegging the EUR/CHF exchange at 1.20, as we mentioned previously. To every rule, there is always an exception.

Joint intervention is when two central banks work together to change the direction of a currency pair they share. If the ECB and the Federal Reserve are concerned about the strength of the euro against the dollar, they may opt to sell EUR/USD together. This sends a strong signal to markets that the two governments are willing to collaborate in order to shift the direction of the currency pair's exchange rate. Joint intervention is extremely rare, and this situation is just hypothetical at this point.

Concerted or multilateral intervention: When several central banks join forces to intervene in the market at the same time, this is known as coordinated intervention. Because it implies a shared goal among numerous governments, this is the most powerful and

effective sort of intervention.

Major central banks do not take coordinated action lightly, and markets do not take it lightly either. It's like being slammed in the head with a sledgehammer. Major long-term trend changes are frequently the consequence of concerted intervention. This is considered a last resort, and it's usually reserved for natural calamities like Japan's tsunami in 2011.

Different governments are accorded varying degrees of respect by the market when it comes to the impact of intervention. Because of the frequency of previous interventions and constant threats of involvement, the Japanese have the lowest level of regard.

Markets treat the BOE, the SNB, and the ECB with far more respect, with the ECB serving as the Eurozone's keystone of credibility. Finally, when the US Treasury (through the Fed) formally intervenes, which

is a rare occurrence, it is treated as a momentous event, and the market normally respects it.

A central bank intervening for its own account is not the same as a central bank intervening on behalf of another foreign central bank. During the MOF/BOJ intervention effort in 2003 and 2004, for example, the US Fed bought USD/JPY multiple times during the New York trading day. The immediate reaction was that the US Treasury was joining in and supporting the MOF/BOJ intervention, which increased the intervention's effect. However, the US Treasury later denied ordering the action.

During the New York trading session, the BOJ requested that the New York Fed intervene on its behalf. Central banks have agreed to act as each other's agents in their respective local markets on a regular basis. So, although the New York Fed purchased dollars, it did so for the BOJ.

Is intervention effective? When central banks become engaged, this is a question that commonly arises. "Yes, but," is the straightforward response.

When monetary policy moves in the same direction as intervention, such as expected higher interest rates to support a weak currency or easier monetary policy to undermine a strong one, intervention is most successful. Even then, adjustments in interest rates do not guarantee the intervention's success.

The intervention may appear futile and unhelpful in the short term. This is particularly true in the case of unilateral intervention. Typically, the market rejects unilateral intervention and reverts to pushing the market in the opposite direction of the intervention. This situation can last for weeks, months, or even years, as the SNB did in 2010, prompting central banks to take even more drastic measures, such as imposing a

currency peg. The outcomes of a coordinated or collaborative action are usually more quick and successful.

Stability of finances

The Great Financial Crisis of 2008–2009 sparked a global economic downturn unprecedented since the Great Depression of the 1930s. As a result, major governments' budgets were thrown into disarray, with tax revenues plummeting and spending being maintained or boosted through fiscal stimuli. Global markets began to question the creditworthiness and financial soundness of key national governments.

The perceived worth of a currency is inextricably tied to investor confidence in the financial soundness of the nation(s) that back it. If investors are concerned about a sovereign debt default, which means that government bonds will not be paid, they will

sell both the bonds and the country's currency. The upshot might be a market panic, with government bond prices plummeting, yields skyrocketing, and the government's borrowing costs rising, thus driving the country out of global financial markets and leading to a default.

The most recent example is the Eurozone debt crisis of 2009–2012, when bond investors fled Greek, Irish, Portuguese, and Cypriot government debt, driving borrowing costs to unmanageable levels and prompting governments to seek bailouts from wealthier Eurozone members. From the beginning of the Greek debt crisis in November 2009 to the establishment of a temporary bailout mechanism in May 2010, the euro lost more than 20% of its value versus the US dollar, and substantially more against other currencies.

And the consequences of the Great Recession

aren't limited to government debt. During the financial crisis, major global banks lost trillions of dollars, and several did not survive. Some global banks remain severely vulnerable and on government life support in the aftermath of the financial crisis and the Eurozone debt crisis. Because European banks hold roughly half of the outstanding Eurozone government debt, sovereign defaults or restructurings (a euphemism for investors not receiving the full amount or payments being delayed) have the potential to cause additional massive losses to the banking sector, further jeopardizing the Eurozone economy.

Debts, deficits, and economic development are all factors to consider.

Highly indebted European countries are far from alone in having investors doubt their financial soundness in the aftermath of the global financial crisis. Debt levels in the United Kingdom, the United States, and Japan are frequently mentioned as possible downsides, weighing on sentiment in those

currencies. The dollar's status as the world's preferred reserve currency is being questioned more and more. Then there are the outliers, such as Hungary, Iceland, and Dubai, which are small economies in general but have credit concerns about their financial soundness that reverberate throughout global markets, sending risk sentiment into a spiral (which we will examine later in this chapter).

You must be aware of the financial soundness of the important currency countries as part of your examination of individual currencies. Keep the following parameters in mind:

The debt-to-GDP ratio is a measure of how much debt a country The total amount of government debt as a percentage of the size of the economy. Countries with debt-to-GDP ratios of more than 90% of GDP are more likely to be considered credit-risky.

Deficits expressed as a percentage of GDP. Current and forecast deficits add to the total

amount of government debt, possibly undermining a country's credit outlook by raising the debt/GDP ratio. A deficit of more than 6% is normally regarded dangerous, while a deficit of less than 3% is considered stable.

Rates of growth (GDP). Low or negative growth can destabilize a country's GDP in relation to its debt payment commitments, rising debt service costs and increasing the possibility of default. During the sovereign debt crisis, the application of austerity measures (budget cuts and tax rises) in the most troubled Eurozone countries threatened to lock those countries into a cycle of underperformance that weighed hard on their debt loads.

For the uninitiated in economics, all of this may appear to be daunting. Don't worry if you can't figure out the debt-to-GDP ratio on your own. Read the business pages in the newspaper or on the internet; they frequently

warn you about countries with debt difficulties ahead of time.

Identifying credit risk

Financial stability, like monetary policy and interest rate movements, is a long-term phenomenon. However, daily events have an impact on the markets' perceptions of specific countries' financial stability.

How do you keep track of the markets' current perceptions of a country's creditworthiness? Through market news reports and economic commentaries, keep a watch on the following credit risk measures:

Ratings of creditworthiness Despite being often late to the game during the GFC, Moody's, Standard & Poor's (S&P), and Fitch's sovereign debt ratings still carry a lot of weight. Certain institutional investors may become ineligible for government debt

offerings as a result of a ratings downgrade, compelling them to liquidate those bonds.

Prior to a rating change (upgrades or downgrades), credit rating agencies will usually declare that a country's debt ratings are being reviewed and provide a bias for that evaluation, such as "Portugal sovereign debt placed on review; outlook negative." These kinds of announcements can have a big impact on the currency in question.

Yield spreads are a type of yield spread. These are the yields (interest rates) of one government's bonds compared to the bonds of a supposedly safer country. Markets focused on the spread between the yields of peripheral countries like Greece and Portugal and those of staunch Germany during the Eurozone debt crisis of 2009–2013, for example.

A widening gap shows growing credit concerns, as bonds from the weak country are sold, raising rates, and bonds from the safe country are purchased, lowering yields and

widening the spread. On a daily and intra-day basis, yield spreads fluctuate, with wider spreads suggesting worsening credit risk and narrower spreads signaling greater relief.

Credit default swaps (CDS) are a type of financial instrument that allows you to (CDS). In the case of a default, these derivatives are essentially an insurance policy in which the buyer pays a premium and the seller is bound to make good on the bond. CDS are a speculative equivalent to the underlying bonds, and they can often predict bond market movements. Rising CDS rates indicate higher credit risk, whereas declining CDS rates, measured in basis points (bps), suggest lower risk.

Results of the debt auction. Governments borrow money through auctions or issuances, in which the government sells its debt to international investors on a regular basis. The essential indicators are the level of demand and the price at which investors are ready to pay (the yield). The bid/cover ratio, or how

much is bid, or sought, in relation to the amount being offered, is used to determine demand. The stronger the demand and perceived security, the higher the bid/cover ratio.

A failed auction, in which the government is unable to sell or borrow the whole amount sought, is "not a good thing," to use Martha Stewart's phrase. However, some investors are willing to buy anything at the proper price, which is where the yield comes in. When investors seek a higher yield (bid a lower price) than current rates, it indicates that they are concerned. For

Another indicator is US Treasury debt, which reportedly attests to worldwide interest for US debt and has consequences for the USD's value. Indirect bidders' purchases are used as a proxy for demand from overseas central banks and reserve managers. A low attendance among indirect bidders could be regarded by other major nations as a vote of no confidence in US debt and/or the USD.

The bid/cover ratio, yield results, and indirect bid amount measurements are all compared to previous auction results for similar issuances.

Geopolitical Events and Risks

Geopolitics is just a fancy term for what's going on in the world at large. Geopolitics tends to focus on political, military/security, or natural disruptions to the global economy or individual regions or states when applied to currency markets. Currency markets are frequently the first to react to international events, as global investors shift assets in response to geopolitical developments.

When it comes to favoring one currency over another, currency markets have no national or patriotic allegiances. The forex market simply estimates the potential economic consequences of a global occurrence, as well as the resulting currency impact.

The populist upheavals in the Middle East

and North Africa in early 2011 are a recent example. Egypt is a small economy, therefore the unrest there did not have a significant impact on the global economy, and currency and other financial markets were unaffected. However, as the upheaval expanded to Libya, a major oil producer, oil prices rose as a result of supply delays, raising fears that other oil producers would be harmed.

As oil and gold prices rose, stock markets began to sway, and the dollar sank. Similarly, geopolitical tensions between Ukraine and Russia in 2014 had little impact on markets due to the Ukraine's small economy and the market's belief that hostilities would not develop or endanger European oil and gas supplies from Russia. To establish the relevance of each international event for specific currencies, you must interpret it objectively, keeping in mind the short- and long-term economic implications.

Because it is the world's largest economy and leading military powerhouse, the United

States tends to have more influence on the global arena. Furthermore, the dollar is the world's largest reserve currency and the de facto currency in many developing countries. Finally, as commerce and markets become more globalized, the US dollar is increasingly used as a worldwide risk barometer (see the next section for more on risk).

For these reasons, the U.S. dollar tends to respond the most in times of global instability or uncertainty, and the market tends to think in terms of USD-positive and USD-negative terms, putting all other currencies in comparison to the US dollar. When global events appear to be threatening, the dollar tends to suffer, especially when compared to safe haven currencies like the yen. The dollar may rise if dangers or tensions decrease.

Individual country elections, such as by-elections and legislative referenda, are also covered by the geopolitical risk umbrella, especially if the outcome could result in a

change in government or economic policy. By-elections (ad hoc elections to fill individual parliamentary seats vacated by death or resignation, for example) are sometimes viewed as interim votes of confidence in the ruling party. By-elections may have a stronger impact on political opinion depending on how close the next general election is, as well as other economic considerations.

Geopolitical concerns are crucial to the market's overall appraisal of a currency's value, although they tend to have short-term repercussions and must be assessed in light of other economic realities. For example, if the USD is weakening due to a bleak economic outlook, and oil supplies are disrupted due to political turmoil or a natural disaster, driving up oil prices, it's even another incentive to sell USD.

If, on the other hand, the USD is rising due to a more positive economic outlook and higher rate expectations, a surge in oil prices might cause the traditional inverse relationship to

break down, causing both oil and the USD to rise.

Taking a risk assessment

The idea of risk sentiment has gained traction in recent years as a way of conveying overall market conditions across financial markets, including FX. Risk sentiment relates to investor behavior and whether they are actively pursuing returns by embracing riskier assets (risk seeking or risk appetite) or seeking the safety of supposedly more secure assets (risk aversion or risk aversion).

averse (also known as risk aversion). Risk-on and risk-off, or risk-positive and risk-negative, are terms used to describe these two behavioral states.

The risk environment can be a major

component in driving currency rate movements for currency traders. The interest rates of many major currencies are one of the reasons. Hedge funds, commodity trading advisers (CTAs), and other leveraged speculators (for more on these guys, see Chapter 3) borrow funds (the leverage) on a short-term basis at the lowest cost available, which means the lowest-interest-rate currencies are utilized as funding currencies. They then sell such currencies in a risk-on atmosphere.

Invest the proceeds in risky assets that have a higher chance of appreciating in value. They're forced to sell their risk assets and acquire back the financing currencies they previously sold in a risk-off environment.

To take a chance or not to take a chance?

So, what factors go into deciding whether risk is on or off? Volatility, in a nutshell. The extent and speed of price swings over a short

time frame, such as hours or days, is referred to as volatility. Volatility, on the other hand, is a symptom of such price movements, not the cause. Market reactions are dictated by news and events.

When news and economic indicators are positive, and everyone is optimistic about the future, risk is on, and risk assets tend to rise admiration (see the following section for what constitutes risk assets). When the news or data becomes unfavorable or outright catastrophic, as it did during the GFC, investors become more cautious and may leave risk transactions, potentially triggering widespread selling and forcing other investors to bail out as well, exacerbating the sell-off.

We have little doubt that algorithmic, or model-based, trading, which has grown in importance across all markets, is to blame for much of the recent surge in the risk-on/risk-off trading dynamic. If the computer is instructed that a change of X percent in one

asset or indication means it should sell an existing position, it will sell without hesitation.

Risk sentiment indicators

It helps to have a strong hold on the current state of market affairs and expectations in order to track the evolution of risk sentiment (see Chapter 10 for how to get up to speed on these). Pay attention to the following for more empirical evidence of risk perception:

The VIX index, sometimes known as the fear index, measures the volatility of options on the S&P 500 U.S. stock index. A rising VIX suggests higher risk aversion (stocks being sold), whereas a lowering VIX indicates a more relaxed outlook.

Government bond yields: Safe assets include

US Treasuries, German bunds, UK Gilts, and Japanese JGBs (for now at least). Rising rates usually indicate that those bonds are being sold and that investors are willing to take on more risk. However, those bonds are occasionally sold due to credit issues, which is risky. Investors are abandoning risky investments and buying the safety of government bonds, as yields are falling.

Stock performance in emerging markets: Investors have become increasingly global in their outlook, and buying shares in Shanghai or Rio is no longer regarded exotic. Emerging market economies have led the way out of the Great Recession, and their stock markets can act as a canary in the coal mine, with prices falling and risk rising.

Assets that are risky versus assets that are safe

Investors and speculators alike have been

compelled to chase profits by investing in so-called risk assets that provide higher potential returns due to the low interest rate environment of recent years. Stocks and commodities are the most obvious examples of risk assets: Stocks may rise as corporate profits rise, and commodities may benefit from increased demand for raw materials and natural resources, such as oil, if the outlook is more positive (risk-on). The risk-on currencies in forex are those tied to commodities (particularly the AUD, CAD, and NZD) as well as important alternatives to the USD, such as EUR and GBP. In a high-risk environment,

Carry trades are also purchased, in which higher yielding currencies, such as those stated above, are purchased and lower yielding currencies, such as the JPY, USD, and CHF, are sold (funding currencies). In a favorable risk environment, for example, the AUD/JPY could rise.

The apparently safe assets, such as US Treasury bonds, the USD, CHF, and JPY, are on the other side of the risk equation (risk-off). Investors generally evacuate risk assets when adverse news and events hit markets (think the Great Financial Crisis or Eurozone debt bailouts), selling equities and commodities and buying government bonds and safer currencies like the CHF, JPY, and USD. Because traders leave (sell) risk-on positions while concurrently buying safer, risk-off assets, price movements in a risk-off environment can be exceedingly volatile.

When potentially disruptive events threaten the economy's outlook, pay attention to the news and be mindful of the risk-on/risk-off dynamic. Depending on the nature of occurrences, they can provide opportunities to reenter a longer-term trend from lower price levels, whether they're short-term like a natural disaster or longer-term like a European financial crisis.

Individual currencies tend to march to the

beat of their own drums when there is no unifying theme such as risk on/risk off. Risk on/risk off may be replaced by a stronger focus on economic fundamentals as major global central banks dismantle massive stimulus programs and normalize monetary policy in the next months and years (see Chapter 6).

MARKET NEWS AND INFORMATION: UNDERSTANDINC AND APPLYING

Keeping up with the latest market news

locating news, statistics, and information

Using themes to make sense of it all

Data and market reactions are being anticipated.

"It only goes to show you," Roseanne Roseanna Danna used to say. There's always something going on. If it isn't one thing, it is something else." Okay, maybe we're on the right track.

We're a little behind the times with a tribute to Gilda Radner's famous Saturday Night Live "Weekend Update" commentator, but her catchphrase matches the FX market beautifully.

Economic data, interest rate decisions, and geopolitical developments, to mention a few, are all real-world variables at work in the currency market at any one time. They're all sifted through the collective mind of the market and converted into price changes.

We're all attempting to make money off of price changes as currency traders, but we're not alone. The currency market has a slew of players, all of them are examining the same

news and data and coming to different conclusions. To add still another layer, they're trading based on those findings, which is what drives currency values in the end.

Which brings us back to the adage: If it's not one thing, it's something else. In this situation, the "other" is how markets digest information, and there is a lot of it. We've spent years as traders, analysts, and strategists in the forex market, and just when we think we've seen it all, something new and unexpected appears. So you're not alone in having to wade through mountains of data in order to make trading judgments.

Your goal is to prevent analysis paralysis and to learn as much as possible about what drives the market, all in the hopes of making profitable currency trading. Our goal is to provide you a greater knowledge of the types of data that influence the market, as well as a solid platform on which to analyze and utilize

that data.

Obtaining Market Intelligence

Getting market information in the first place must be the starting point for any discussion of market data. Teams of economists, analysts, and strategists provide up-to-the-minute observations and interpretations to institutional traders. Is this a benefit for them? No, it isn't required. Most of the information they acquire is available to individual traders in the large picture, but you have to look for it, study it, and understand it.

The art of boarding a train that is moving.

Anyone who has attempted to board a moving train knows that you must first run alongside it before reaching out to take a hold. If you try to grab on while standing flat-footed, your arm will most certainly be ripped off. The forex market is no exception, and

any trader who attempts to enter without first becoming familiar with the basics is asking for problems.

Getting up to speed on the FX market entails studying what the market's current themes are. To do so, you'll need to know where to look for market data and how to evaluate it.

However, getting up to speed takes time, so don't get into trading just because you've done a few days or hours of research. We recommend following the various currency pairs for a month and becoming familiar with what's going on.

on before you think you're up to date. Getting started with an online forex broker's practice account is a terrific method to learn the ropes. You'll be exposed to a full cycle of economic data indicators and most market events, such as central bank meetings, over the course of a month, giving you a personal feel of how the

market reacts to new information.

The fact that there's constantly something going on - a train leaves the station every few minutes — adds to the thrill of currency trading. So don't be concerned about missing the next train; there will always be one just following it.

Getting a feel for the market

With the rise in popularity of online currency trading in recent years, there has been a proliferation of currency-specific websites aimed towards individual traders. We can't possible cover them all, but you should start with FXstreet.com (www.fxstreet.com), a comprehensive site with a wide range of market research, many from well-known institutional contributors, and all of it for free. Another important source of information is Twitter, particularly during large data releases and breaking news events.

Keep in mind who is supplying the analysis while you're looking at forex research from numerous information sources. If you don't know the analysts' names or backgrounds, you might be reading the work of someone who has only a few months or a year of market experience, which isn't the most sophisticated perspective. When in doubt, rely on reports from big financial institutions or market analysts you know and trust.

Most online currency trading platforms also provide various sorts of market research and analysis, so consider the quality of its research offerings when picking which broker to register an account with.

Sources of information

We used to rely on the mainstream financial press, which provided constant coverage of the major financial markets. Their websites provide frequent intraday updates on data

releases and announcements, along with institutional opinion, so you can better understand how and why the market is behaving. Our top picks are listed below in alphabetical order.

Bloomberg (www.bloomberg.com) is a news organization based in New York City.

MarketWatch.com (www.marketwatch.com) is a website that tracks the stock market.

Reuters (www.reuters.com) is a news organization based in the United Kingdom.

On the other hand, it's always a good idea to follow reliable sources on Twitter. You can follow most of the main news outlets to get a rapid perspective of what's going on, and some of the most regarded analysts tweet throughout the day. It's also worth checking at various blogs, such as Forex Factory (www.forexfactory.com) and Baby Pips,

which can provide important information (www.babypips. com). When it comes to analysis, quantity does not always imply quality, so check out a few sites and then filter them down to the ones that work for you.

Always keep a watchful eye on a market news report when reading it. Keep in mind that what's being reported has already occurred, and the market has processed the news and altered prices as a result.

Always ask yourself this question when processing news and information:

Where did the information come from? You must distinguish between fact and opinion or hearsay.

What is the information's age? You must

assess the information's timeliness and the extent to which the market has already acted on it.

Market news sources that are updated in real time

The forex market reacts swiftly to breaking news, and institutional investors typically receive numerous live feeds from recognized newswires such as Dow Jones, Bloomberg, and Reuters. Twitter, which offers you access to hundreds of thousands of news sources and may be an effective way to acquire real-time market information, is one of the fastest ways to get real-time news these days, especially data releases. Here at FOREX. com, we're big on Twitter, and you can find us at @forexcom. Everyone on our global research team tweets throughout the day, so no matter where you are, you can get 24-hour coverage.

We offer real-time market commentary

(known as Forex Insider) immediately on our trading platform at FOREX.com. Our research team and veteran traders provide updates based on our years of expertise trading in the interbank currency market. Forex Insider provides real-time analysis of data releases and other major events, as well as tactical trading considerations such institutional buying and selling flows, currency option inter- trading, and more est, as well as technical resistance and support levels. It's a terrific resource for individual traders, and it's about as near to the institutional market as you can get.

Calendars of events and economic data

The forex market is based on economic data and happenings, so you'll need to discover a credible market calendar to keep track of what's coming up next. The finest market calendars display the timing of the report, what the market is forecasting, and what the last report revealed for every key future

economic releases.

Economic events such as central bank rate-setting meetings, the publishing of minutes from those meetings, speeches by central bankers, and major meetings such as monthly gatherings of Eurozone finance ministers are maybe even more important than data reports. The market is regularly moved by comments from these events in the near term, and if you're not aware of them, you risk being caught off guard.

We'll look at how markets anticipate data and events later in this chapter, and how that anticipation might alter currency prices. However, you can't plan ahead if you don't know what's coming up.

Forecasts for currencies

In your market research, you'll likely come across a lot of one-month, quarterly, and year-ahead currency-rate estimates because the majority of the financial media is interested in institutional forecasts of where currency rates are headed. Treat them as a general indicator of market sentiment and outlook rather than a specific trading advise. Most forecasts are significantly skewed to current conditions and are a better indicator of what the market is thinking right now than where rates will be in a month or a year.

Where there's smoke, there's fire, according to rumors.

As if the 24-hour currency market didn't have enough actual news and information to deal with, rumors have a nasty habit of cropping up at inconvenient moments. Rumors are popular in all financial markets. Here are a couple of forex market favorites:

Whisper numbers: These are rumors about economic data being released anywhere from a few minutes to a few hours ahead of schedule. They have a tendency to roil short-term positions that were established in anticipation of a report, as well as influence the market's reaction to the news.

For example, a rumor figure implying a much-worse-than-anticipated U.S. data report, which was already predicted to be weak, may put the USD under even more pressure before the release time. When the real number is released, and it is low but in accordance with expectations,

The USD may actually bounce because the greatest concerns were not realized, and it is not as weak as the whisper number suggests.

Large market orders: These are tales that, like everything else, are frequently true, but not always. They're commonly associated with central banks or major institutional buyers or sellers, and they normally include a price

level. Keep an eye on the price level as a potential support or resistance level. If the pricing level is violated, the order was either faked or filled. In any case, the price level has given way, perhaps setting the stage for a new directional move.

Rumors spread quickly these days, and you may have to deal with them numerous times each day, which can lessen their impact on the market over time. The problem with rumors is that there's no easy way to tell if they're genuine, and even if you do, there's no way to predict how prices will react, which is ultimately the key to dealing with them. Rumors have an eerie way of surfacing following reasonably large directional moves or efforts to break through key technical levels, only to fail and see prices reverse direction.

The idea is to be aware that an intraday move or test of a technical level is taking place, and to have a tight exit strategy in case the market turns tail. If there's a rumor behind a quick

reversal, you'll generally find out after the fact, but a well-thought-out departure strategy will keep you from being left behind.

Focusing on Themes and Putting Market Data into Perspective

Several subjects attract the attention of traders in the forex market at any one time. The essence of the real-world forces currently ruling the market are market themes. When market observers and analysts explain what's going on in the market, they're referring to themes. Themes are, above all, the filters through which fresh facts and information are received by the market.

Market themes exist in a variety of shapes and sizes, and their effects on the market change through time. Some are long-term issues, such as the ongoing US trade deficit, that can influence market direction for months or years.

Others, such as unexpectedly hawkish statements from a central banker, may only maintain sway for a few hours, days, or weeks.

Market themes are divided into two types, which coexist in parallel realms but frequently overlap. We want to concentrate on two types of themes: basic themes and technical ones.

Themes that are driving essential themes

Each currency is judged by the market based on its own set of fundamental factors. The basic fundamental environment is constant, but it is also vulnerable to change over time, much like economic conditions do during business cycles. Fundamental themes will also vary in importance relative to one another, with some being pushed to the side for a moment while news or events focus the market's attention on other, more pressing

issues.

Keep in mind as you read the following sections that each theme applies to every currency to varied degrees at any given time. We give some examples of what might happen to a currency based on what incoming data signifies for each theme; at the end of this chapter, we go into further detail on how the market analyzes new data.

Interest rates are rising or dropping.

The single most important predictor of a currency's value is usually interest rates. (In Chapter 5, we go through the importance of monetary policy and interest rates in greater depth.) But it's not just about where interest rates are right now, though that's crucial (higher interest-rate currencies tend to do better against lower-yielding currencies). What concerns the most is their overall direction (up or down), future level (how high or low they're likely to go), and the timing of

any adjustments (how fast rates are likely to change).

Even though interest rate adjustments are relatively infrequent, markets are continually speculating on their direction. The Bank of England, for example, hasn't changed interest rates since 2009 as of this writing. One of the key determinants of a currency's value on a daily basis as well as over longer time frames is speculation on the direction and timing of interest rate increases.

The economic growth data and inflation reports, which we discuss in depth in Chapter 7, are the information inputs that drive the interest rate outlook. The stronger the growth picture or the higher the inflation expectations, the more likely interest rates will rise, improving the currency's outlook. The weaker the growth outlook or the lower the inflation readings, the more likely interest rates will stay the same or fall, causing a

currency to suffer.

Bond markets are the finest real-time barometer of the market's interest rate expectations and have a lot to say about interest rate direction. Short-term interest rates, which are governed by the central bank's target interest rate, are the only thing central banks can influence. Longer-term bond rates, with a ten-year maturity as the benchmark, represent the market's long-term assessment of an economy's prospects and the expected direction of future interest rate movements. (Central bankers can only influence long-term yields by launching costly quantitative easing [QE] initiatives, which they do not do lightly.) Only after the financial crisis did this method become popular.) Falling long-term bond yields (lower interest rates) indicate a weaker economic outlook and the likelihood of lower interest rates in the future, normally depreciating that currency, whereas rising bond yields indicate economic optimism and

anticipated higher rates, thus strengthening that currency.

When the interest rates of two currencies are predicted to diverge — when one currency's interest rate is expected to rise while the other is expected to stay the same or fall — interest rate themes have the most impact. Keep an eye on three-month yield spreads — the difference in yields between two government bonds — for movements that could benefit one currency over another. It is not necessary for rates to differ in order for currencies to be affected. One currency's yields may simply rise quicker than another's, as evidenced by the widening difference between the two.

Always examine incoming information in terms of what it means for the nation's currency's interest rates — the interest rate theme — while looking at economic data or monetary policy language. If an economic

growth report or an inflation number comes in higher than predicted, a currency that is projected to experience lower rates in the near future is likely to cease falling and even rise. The market will take a breather to examine if its forecast of lower rates is accurate.

When confronted with poorer economic statistics or lower inflation readings, a currency facing the potential of reduced interest rates is likely to decline further. We say "weaken further" because it was most likely already under pressure and declining before the latest batch of data was released.

Looking for ways to improve

Economic development forecasts are at the heart of a slew of other factors that influence currency value, from interest rate expectations to the attractiveness of a country's investment climate (stocks and bonds). Not surprisingly, the stronger the

growth expectation, the better a currency's performance will be in comparison to currencies from countries with lower development prospects. Strong economic growth raises the chances of future interest rate hikes, as central bank officials normally try to limit too rapid growth to avoid inflationary pressures. Weaker growth statistics raises the possibility of lower interest rates while also depressing the investment environment's outlook.

Many growth statistics reports concentrate on a single area of a country's economy, such as manufacturing or the housing market. Those reports will tend to be perceived as more or less relevant depending on how important that sector is to the greater national economy. Because manufacturing plays a larger role in Japan than it does in the United States, industrial production data is more important to the Japanese perspective than it is to the US outlook.

There's no one-size-fits-all formula for how growth data affects the value of a currency, but when the interest rate outlook is essentially neutral, like when there's no firm belief in the direction of two countries' rates, the growth theme becomes more relevant.

Inflation control

Inflation is the dreaded boogeyman that all central bankers fear. They worry about inflation even when it's low - it's just part of the job. It doesn't matter if inflation is too high for their comfort. You must also monitor inflation numbers as a currency trader who is aware of monetary policy movements. (In Chapter 7, we delve deeper into the important inflation reports.)

In terms of what it means for a currency's value, the inflation theme is significantly more subtle than the growth theme. It can result in very different outcomes for a

currency depending on the wider picture. It's a currency gain in general if growth is strong and inflation is excessively high. It's a currency negative if growth is low or deteriorating, and inflation is excessively high.

Do you want to come back? Both options hint to stable-to-higher interest rates, which should be a currency plus in most cases, right? The problem is that a low-/slow-growth scenario combined with high/higher interest rates raises the danger of an economic downturn, which would eventually lead to interest rate decreases down the road. In this way, currencies are a bit fickle in that they prefer higher interest rates sometimes but not always.

When a central bank keeps interest rates too high for too long, mainly to combat inflation, the market begins to speculate that an economic downturn is on the horizon. When you consider that the forex market is, first and foremost, always predicting future

interest rates, the answer isn't all that surprising.

Consider how the overall growth theme is holding up when incorporating inflation data into the interest rate theme. Higher inflation readings will be currency supportive if growth is solid and inflation is high due to economic strength. If growth slows and inflation remains high, the currency impact will be far less favourable, if not outright negative.

Looking for a sense of security

Financial stability was highlighted as another major problem during the Great Financial Crisis of 2008–2009 (GFC) and the Eurozone debt crisis of 2009–2013. The financial sector (banks and insurers) was shook to its core in the early stages of the crisis, necessitating major government involvement to prevent a system-wide disaster. Excessive government debt and budget deficits were eventually exposed as a threat to sovereign debt and

economic growth during the subsequent economic slump. Government debt levels and the potential of a sovereign default may continue to be an issue for years to come as the developed economies struggle to recover.

Financial stability and creditworthiness perceptions can have a significant impact on national currencies, usually for the worse, whether it's excessive debt levels in Europe or quantitative easing in the United States. Keep an eye on government bond yields for signs of market anxiety. Higher yields could indicate that investors are selling a country's bonds because they are afraid of a default, rather than because they predict positive growth. If this is the case, the at-risk country's currency, as well as its bonds, will suffer. (For further information on this subject.)

determining the structural motifs' strength

Aside from interest rates, growth, inflation, and stability, a number of other major

themes, particularly in the structural arena, emerge on a regular basis (the big- picture elements of how an economy is performing).

Structural motifs might be transitory, appearing in full force one day or for several weeks or months before disappearing entirely from the radar screen. Although structural topics are usually secondary to the ones discussed in the previous sections (interest rates, growth, inflation, and stability), they can nonetheless have a major impact on a currency on their own. They can, above all, increase the impact of the principal themes, much like throwing gas on a fire. The following are some of the most common structural themes:

Employment: Employment is a primary driver of interest rates and a key indicator of an economy's long-term performance. The longer-term economic outlook is sustained as long as employment is increasing. However,

if employment growth slows, as evidenced by recent labor market surveys, economic prospects will deteriorate. Returning to the primary interest rate theme, sharp increases in unemployment are among the fastest triggers for central bank interest rate decreases.

Deficits: Both fiscal and trade deficits are typically negative in terms of currency. When growth is poor or slow, the impact of deficits is accentuated, as the currency's credibility is called into doubt, as it was recently with the euro. Deficits may have less impact during periods of steady/high development, but they are still a bad cloud hovering over the horizon.

Geopolitical tensions: It may seem like a given now, but geopolitical tensions were not always as prevalent as they are now, from North Korean nuclear testing to political turmoil in the Middle East and trade disagreements with China. Safe-haven currencies like the Japanese yen and the Swiss franc tend to outperform riskier

currencies like the Australian and New Zealand dollars during times of global stress. Given the scale of the US economy and the possibility of military participation, the USD is also subject to geopolitical crises. When international tensions ease, the market quickly returns to familiar themes.

Political elections or instability: Changes in administration and political uncertainty in major-currency countries can wreak havoc on the market's perception of that currency. Political issues, on the other hand, tend to disappear rapidly after a political situation is settled.

Examining technical issues

Technical concepts may be more difficult to grasp than fundamental ones (see previous section), especially if you are unfamiliar with technical analysis (see Chapter 11). To cut a long story short, currency prices occasionally

move simply because currency prices move.

The core economic or political themes may not have altered significantly, but price levels have, and this is often enough to elicit significant market attention.

Breaks of important technical or price levels will almost always be in the direction suggested by prevailing fundamental trends, but the timing is often unpredictable, leaving traders scratching their heads and wondering what just happened. Large price moves, on the other hand, have a habit of taking on a life of their own, forcing market participants to act only on price changes.

Furthermore, the widespread use of technical analysis as a basis for many trading choices can lend weight to already-existing

fundamental-driven moves, resulting in a new theme to fuel the move – the technical theme. It could be a trending market that draws trend-following traders who aren't concerned with the underlying fundamentals. They keep pushing the market in the direction it's headed as long as the technical trend is in place, even if the fundamentals don't support it.

Breakout traders — speculators who focus on getting in on breaks of key price levels, trying to get in on the move for an easy trade — will flock to a currency pair that has broken through crucial technical levels. (However, nothing is ever so simple, and breakout traders might lose money if the breaks are false and the ranges hold.) The greater interest flowing into the market in the direction of the move forces the price higher and faster than it would otherwise.

Even if you don't use technical analysis to make your trades, having a concept of where a currency pair sits from a technical

standpoint is essential.

The technical-theme phenomena is also rooted in a number of real-world considerations, all of which are linked to the relative level of currency prices.

Option interest: The currency options market is enormous, and it is one of the reasons for the size of the spot currency market. Outside of short-term spot speculation, option-related hedging is one of the most important sources of spot market activity. Option interest tends to accumulate around the recent range when spot prices have been trading in well-worn territory (a rather narrow price range, for example). When trading ranges are broken, large amounts of option-related interest are often required to enter the market and trade in the direction of the price breakout, either to unwind hedges or to cover new exposures produced by the price break, or a combination of the two. The sums can be enormous, accelerating the directional shift to extremes.

In Chapter 3, we'll look at what's known as "black box" or "algorithmic" trading. Algorithmic trading has grown considerably in recent years, with some estimates claiming that algorithmic systems account for 30 to 35 percent of daily activity. Trading decisions made by systematic models are frequently based simply on price changes. They may be short a currency pair until, for example, a specified price level on the upside is traded, triggering a signal to quit the short and go long, no questions asked.

Hedgers: If a sudden and unexpected price change occurs, large-scale hedgers may be obliged to enter the market. For business and financial management needs, many companies establish an internal hedging rate. They're looking fine as long as they can sell above or purchase below that pricing. They may be forced to jump in on the direction of the move if the market moves strongly against them, for fear of never seeing the inter- nal hedging rate again.

Reality Check: What You Expected vs. What You Got

When it comes to reacting to data reports and market happenings, the forex market usually follows one of two patterns. The first reaction is a short-term price reaction to the data report or news, which is where the majority of the intraday fireworks in the forex market take place. Later trading, when the underlying themes (described earlier in this chapter) are updated to reflect the most recent piece of news or data, produces the second reaction, which is usually more relevant in the larger picture.

In other cases, the data or news may be consistent with current trends, and the initial directional price reaction may be stretched even farther in following trading action. It's possible that the market is anticipating cheaper prices.

Interest rates in the United States, for example, and a bad consumer confidence report in the United States, for example, send

the dollar initially lower against other currencies. Additional selling activity may emerge as a result of the lower confidence reading, which reinforces the concept that the US economy is failing. This might lead to further USD price drops.

In other circumstances, the data report may run counter to market trends, causing an initial reaction in the opposite direction of the current trend. The market could be trading on the idea that Eurozone interest rates are rising and the Eurozone economy is improving. A future Eurozone retail sales report could be disappointing, prompting an early market reaction that sees the euro drop.

The market's assessment of the latest retail sales report in context of the bigger theme of stronger European growth and higher Eurozone interest rates will determine if the euro's decline will be sustained.

The statistics report could have been influenced by inclement weather, which kept

shoppers at home, and could be viewed as a stumbling block on the approach to higher Eurozone interest rates. Initial euro depreciation could be short-lived in this situation, with the currency later reversing course higher. The disappointing retail sales report, on the other hand, may force the market to question whether rising European Central Bank (ECB) rates are a foregone conclusion and continue to sell euros.

Of course, there's no one-size-fits-all formula for how the market will react to data and news. To say the least, the possibilities for data and event outcomes and subsequent market reactions are numerous. One explanation for this is because the market reaction to data is always more important than the data itself.

But, as currency traders, we still need to know what the data means in order to interpret what the market's reaction implies

for the big picture. The first step is to comprehend the initial market reaction to the data/news in terms of what the market expected versus what it received. We need a starting point for interpreting future price changes.

Consensus expectations and their role

Data reports and breaking news stories do not occur in a vacuum. Incoming data reports are compared to market estimates in forex markets, which are referred to as consensus expectations or simply the consensus. The average of economic forecasts produced by economists from major financial institutions, private enterprises, and academics is known as consensus expectations. News organizations such as Bloomberg and Reuters poll economists for predictions on impending statistics and compile the results. The average forecast that results is what is displayed on market calendars, indicating what is predicted for any specific data report.

The market will use the consensus as a benchmark against which to evaluate new facts. When it comes to economic statistics, the market will compare the actual outcome — the economic figure that has been released — to what was expected (the consensus). The market often interprets the real data in the following terms:

The actual data report was at or very close to the consensus forecast, as expected or in accordance with expectations.

Better than expected: Overall, the report outperformed the consensus forecast. A better-than-anticipated reading on an inflation report indicates that inflation was lower than predicted, or more benign.

Worse than expected: The data falls short of the consensus forecast. A worse-than-anticipated number on an inflation report indicates that inflation was more than predicted, or more inflationary.

Furthermore, the degree to which a data report exceeds or falls short of expectations is critical. The greater the likelihood and magnitude of a subsequent price shift following the data release, the more off the mark the data report is.

The market examines central bank announcements and comments from monetary officials in terms of hawkish (leaning toward rising interest rates) and dovish (leaning toward lowering interest rates) language (leaning toward steady to lower interest rates). (In Chapter 5, we delve deeper into analyzing central bank rhetoric.)

Forecasts are priced in and out.

However, financial markets don't usually wait for news to be revealed before trading it, and the currency market is no exception.

Currency traders start pricing consensus expectations into the market anywhere from several days to several hours before the

anticipated release of a report. Trading as if the data had already been revealed and, in most cases, as if it had come out as expected is known as pricing in. The more important the report, the sooner markets will begin to price in expectations.

Unfortunately, there's no easy way to know whether or how much the market has priced in consensus expectations, so you'll have to pay attention to market commentaries and price action in the hours and days leading up to a scheduled report to get an idea of how much the market has priced in any forecast. And it's not always the case that the market has priced in the expected outcome. In the run-up to the release, market sentiment may have soured (or improved), causing the market to price in a worse-than-expected (or better-than-expected) report. Keep up with market reports to get a sense of how things are going.

In the days leading up to the report, consensus forecasts can shift based on other

interim findings. For instance, the Institute for

If the regional Chicago purchasing managers' index, which is released a few days before the ISM index, is weaker (or better) than projected, the ISM manufacturing estimates may be decreased (or boosted). Depending on how much consensus was priced in, this could result in pricing out of consensus expectations.

When good intentions turn sour

When a data report comes in below market expectations, it's referred to as a data miss. If the consensus was for an increase in a specific indicator, but the actual report is worse than expected or disappointing, the effect could be a dramatic price reversal. If core US durable goods orders, for example, are predicted to climb but wind up declining, we could see a big decline in the USD. Those that went long on the USD will be dumping their positions alongside traders selling the

USD on the weak result if the USD has risen before to the announcement on the basis of pricing in the favorable consensus. If negative expectations are matched by a surprisingly positive data report, the same thing can happen in reverse.

When it comes to data releases that are as expected, it's often a case of "buy the rumor, sell the fact" (meaning, traders have already priced in a strong report, and if it meets expectations and sometimes even exceeds them, traders who bought in advance will be looking to take profit and sell on any subsequent gains).

Depending on the currency pair and the nature of the consensus projection, this market event can also occur in the opposite way, as in "sell the rumor, buy the fact."

Alternative outcome scenarios are being anticipated.

We've found that thinking through the potential reactions to important news releases can help you anticipate how the market will respond if the data shocks you in one way or another. It's just academic, and it won't cost you anything, but if you're into trading around data reports, it could give you a huge advantage over the competition. Consider several "what if" situations to assist us focus our attention and trading methods on the present primary themes.

For example, if the market expects an increase in the forthcoming ISM manufacturing index in the United States, we like to consider what will happen if the ISM disappoints those expectations, as well as what will happen if it surprises.

to the upside and is now considerably more powerful. This causes us to concentrate on recent price movement, and we may see that the USD has fallen slightly ahead of the announcement due to improved Eurozone

statistics released overnight.

We're now considering how many pips lower the USD would likely fall if the ISM comes in below estimates. We identify critical support levels and use them as benchmarks for assessing market reaction. We've also identified critical resistance levels above that may come into play if the report surprises to the upside, as well as where the next barrier levels are behind them.

When the data is out, we'll have a reasonable baseline against which to measure the market's reaction. We've highlighted which USD resistance levels may be tested if the ISM climbs as projected. If they aren't being tested, we're beginning to believe that the market is more set on buying EUR than the greenback, and that fighting the short-term trend isn't prudent. If the ISM comes in below expectations, we've identified negative USD support levels (EUR/USD resistance levels) that, if broken, might lead to more USD weakness/ EUR strength.

Consider what the market is anticipating based on consensus forecasts and how much has already been priced in. Prepare to incorporate a variety of data results into the bigger themes you've already defined. Consider how the market is likely to behave in response to those possibilities, and you'll be a step ahead of the pack. (For a real-world look at how we prepare for market reactions to data and events, see the "Anticipating and Trading on Market Reactions" sidebar.)

Market reaction prediction and trading

We prefer to build multiple specific outcome scenarios in terms of pips for important U.S. releases like the nonfarm payrolls (NFP) report, retail sales, or Federal Open Market Committee (FOMC) minutes, for example. Let's take the NFP report as an example. Let's say the consensus forecast is for a 100,000-job increase. The market will have drifted to a level that represents that consensus in the

days leading up to the release. We construct our own expectations by using that level as a pivot. If the NFP data comes in at +125,000 jobs, for example, we can expect EUR/USD to fall 30 pips. If the NFP adds +150,000 jobs, we should expect the EUR/USD to fall 60 pips. Then we repeat the process for reports that are less than predicted. If just +50,000 jobs are reported, EUR/USD may rally 50 pips, and so on.

When the number is released and markets begin to respond, we'll have a good idea of where prices should go based on multiple data points. When prices don't react the way we anticipate them to, we have genuine trading information. For example, if the NFP number is +180,000 (and we expected a 90-pip loss or such), but EUR/USD only drops 40 pips before stabilizing, we'll assume something is amiss with the market's reaction to the news and something else is going on. We're not alone in many circumstances; the rest of the market is probably coming to the same conclusion. The message is

unequivocal: Cover short positions in the EUR/USD and consider going long. If EUR/USD trades back up through the pre-NFP price level in the next hours (or minutes), it's a clear hint the market has other ideas about where EUR/USD should be, and it's a stronger signal to go long EUR/USD.

Gaining an understanding of how markets should react to data takes time and practice, which you may obtain by using a practice account. However, you may obtain a sense of how markets should react to data by looking at previous data results and market reactions.

GETTING DOWN AND DIRTY WITH THE BASICS

Creating a model to put the data in context

Understanding data-reporting protocols

Understanding the most important data reports from the United States

Taking a look at some of the most important international economic reports

Fundamental economic data reports are one

of the most important sources of information for policymakers and market participants.

To assess the state of the economy, formulate monetary policy, and make investment decisions, they are used. Data reports, from the perspective of a trader, are the regular catalysts that agitate markets and start things going.

This chapter covers a lot of economic information, but you don't need to be an economist to comprehend it; you're mostly interested in what it means for market reaction. (We recommend Bernard Baumohl's The Secrets of Economic Indicators: Hidden Clues to Future Economic Trends and Investment Opportunities, 2nd Edition, if you want to comprehend statistics like an economist.)

Individual reports' importance fluctuates based on the economic condition, the market's present focus, and a variety of other

factors, as we discuss in Chapter 6. Always remember that markets interpret incoming data based on what it signifies for the overall picture. If a country's economic outlook is generally regarded as optimistic, data pointing to faster growth will bolster that perspective, while data that disappoints may prompt a more negative reaction. The market's reaction to data is, above all, more essential than the data itself.

In the first half of this chapter, we'll look at how to interpret the various data reports and incorporate them into a bigger picture of each country's economic outlook, as well as the consequences for interest rates and currency values.

We go over the major data reports in the second half of this chapter to give you an understanding of what they cover and how the market understands them.

Obtaining Information

You must first know where to look for all of the economic data before you can begin processing it. We'll go through where to find data information in greater depth in Chapter 6, but here's a quick overview.

The economic calendars normally offered by online forex brokerages serve as a starting point. Keep in mind that some calendars aren't as complete as others, so search for calendars that include events and speakers rather than just statistics. Also, search for a broker who offers data and event previews, as well as real-time data and market analysis; this type of commentary can help you understand what the market is anticipating, how it might be positioned for the news, and how it will react.

U.S. data releases are usually broadcast live on cable business networks such as Bloomberg TV, CNBC, and Fox Business News. Bloomberg TV, in our opinion, does the best job covering non-US data releases,

while CNBC World is another alternative. However, Twitter is your best choice for seeing U.S. and global data releases right away.

Furthermore, www.bloomberg.com, www.marketwatch.com, and www.reuters.com offer comprehensive data coverage both before and after it is released, as well as event calendars. Read the economic data news stories on these sites to learn more about the data reports, including any subcomponent readings or major changes.

In addition, many calendars may incorporate market significance labels for each data series, such as high effect or low impact. Remember that it's the whole picture that counts, and even a "low impact" report can have a significant impact if it's surprising enough.

In the next part, we'll sketch up a model for figuring out how different data kinds fit into

the broader picture. It should assist you in determining which data types are the most important, depending on the current economic environment.

Making Sense of Economic Data (Economics 101 for Currency Traders)

If you're like most people, you know what certain economic figures, such as the unemployment rate or the consumer price index, mean (CPI). However, if you're like most people, you probably have no idea how to put the data together to make sense of it all. Understanding what the data means and how the market is likely to react to it requires a foundational model to put the data into context. You'll be able to react in the market faster if you can understand what a specific report means and how it fits into the wider picture.

In the following sections, we'll show you how to read the plethora of economic data you'll

see in the currency market. This model isn't the be-all and end-all of economic theory, but we believe it provides a good framework within which to hang economic indicators and examine how they interact.

The employment market

We prioritize the employment picture because jobs and job creation are critical to any country's or economic bloc's medium- and long-term economic prospects. Always keep a mental picture of the labor market in the back of your mind, no matter what else is going on.

When more employment are created, more wages are paid, consumers consume more, and economic activity grows. Long-run economic growth is often hindered if job growth is flat or sluggish. Unless there is also employment growth, signs of broader economic development will be viewed as uncertain or dubious. Both scenarios have

significant ramifications for interest rate changes and investment themes, both of which are important currency drivers.

Labor-market strength is often viewed as a currency positive by currency markets because it signals positive economic possibilities in the future, as well as the possibility of higher interest rates based on faster growth or wage-driven inflation. Labor market weakness is, unsurprisingly, perceived as a currency negative.

The monthly non-farm payrolls (NFP) report in the United States is the most widely watched employment indicator. For a few days before and after the NFP data is announced, there is a lot of buzz and speculation, but then the market tends to stop talking about jobs. Keep an eye on the job-specific reports included later in this chapter in the "Other labor-market indicators" sidebar.

Figure 7-1 illustrates changes in private

payrolls in the United States superimposed with the S&P 500 stock index to show how important jobs are to markets. As you can see, key stock market turning moments (although not necessarily the economy) are closely linked to job market peaks and troughs.

Graph 7-1:

the labor market

Trends are extremely strongly related to stock market performance.

It indicates the economic prognosis (rather than the existing state of the economy).

omy), as seen by variations in private pay in the United States and the S&P 500 index.

500.

FOREX.com/Bloomberg/Bloomberg/Bloombe

The customer

If it weren't for the overall importance of jobs to long-run economic growth, the consumer would undoubtedly come first in any economic data analysis model. Personal spending drives the economies of the main currencies, accounting for 60 to 70 percent or more of overall economic activity in developed nations.

The way people spend their money is referred to as personal consumption (also known as private consumption, personal spending, and other impersonal names). In a nutshell, are they spending more money or less money? Also, what is their expenditure forecast – will it increase, decrease, or remain the same? Look at how individual consumers are doing if you want to get a sense of an economy's short-term prospects.

The commercial sector

After consumer expenditure, businesses and corporations account for the remaining third of overall economic activity. (To keep things simple, we're keeping government out of our model.) Firms contribute directly to economic activity through capital expenditures (for example, building factories, stores, and offices; purchasing software and telecommunications equipment) and indirectly through growth (by hiring, thereby re-creating jobs), expanding production, and generating investment opportunities.

Take a look at the corporate data reports to see what they say about overall sentiment, capital spending, recruiting, inventory management, and output in the future.

Keep in mind that manufacturing and export industries are more important in many non-US countries than they are in the US.

Manufacturing activity in the United States, for example, accounts for just approximately 10% to 15% of total activity, compared to 30 to 40% or more in other major-currency economies like Japan or Germany. As a result, data on Japanese industrial production has a greater impact on the yen than data on US industrial production.

The framework

Structural indicators are data reports that look at the economy as a whole. Currency movements are typically based on structural factors, which are most relevant to medium- and long-term traders. The main structural reports are concerned with

Inflation is defined as the rate at which prices rise or fall. Inflation measurements can be a useful indicator of interest rate direction, which is a major determinant of currency values.

Growth: Indicators of general economic activity and growth, usually reported in gross domestic product (GDP) statistics. The state of the economy is determined by structural growth reports, which show whether the economy is increasing or decreasing.

how quickly, which is another important factor in monetary policy and interest rate forecasting. Economists' growth estimates serve as crucial benchmarks for assessing later economic data on growth.

A country's trade balance indicates whether it imports more or less than it exports. A country's currency weakens when it has a trade deficit (it imports more than it exports; it loses money through trade) because more of its currency is sold to buy foreign goods (imports). Because more of it is being bought to buy that country's goods, a currency with a trade surplus (the country exports more than it imports; the country earns from trade) tends to appreciate. This is merely a guideline; it does not always apply. The British pound, for

example, gained by more than 11% between 2013 and 2014, while the UK's trade balance continued to deteriorate.

The entire level of government borrowing and the market's impression of financial stability are referred to as fiscal balance. If economic conditions deteriorate and markets fear financial instability, countries with high debt levels risk their currencies falling. After the Great Financial Crisis of 2008–2009 (GFC) and the Eurozone debt crisis of 2009–2013, debts and deficits became a prominent subject for currency markets, but they were always in the background.

From a trading standpoint, evaluating economic data reports

The data in economic textbooks is usually quite tidy and clean, but the data as it comes in the market can be anything but neat and clean. We're discussing not simply the flaws in economic data collection, but also how

markets interpret individual data reports.

The concept of consensus expectations is introduced in Chapter 6 as one of the keys to understanding how markets process economic news and data. In the sections that follow, we'll look at some of the most important data-reporting conventions and how they can affect market reactions. When currencies don't react as expected to the headlines of a data report, one of the following factors is likely to blame, and you'll need to examine the report more closely to get the full picture.

Recognizing and revising data's past

Economic data reports aren't created in a vacuum; they've been there for a while. "One report does not make a trend," according to another classic market adage. That adage, however, is usually applied to data reports that are significantly different from market expectations or from recent readings in the data series. To be sure, when data comes in that is unexpectedly better or worse than

expected, the market will react violently, but the reaction's viability will vary widely depending on the circumstances. Is a one-month reduction in retail sales indicative of the trend ending, or was it a one-time decline due to bad weather keeping shoppers at home?

When analyzing impending economic data events, it's important to understand not just what to expect, but also what, if any, trends are visible in the data series. The longer or more obvious the trend, the more likely it is that reactions to out-of-line economic statistics will be short-lived. The more erratic the recent data, the more likely the reaction to the new data will persist.

Another thing to keep in mind when assessing incoming ecological data is whether or not the previous period's data has been altered. Regrettably, there is no rule prohibiting the alteration of older economic data. It's just one of those strange facts of life in financial markets that what the market

thought it knew one day (and traded for several weeks based on that understanding) can be drastically different the next.

When prior-period data is changed, the market will typically net out the older, revised report with the newly disclosed data, basically comparing the two reports to see what they say about the data trend. For example, if a recent report is worse than predicted and the earlier report is also revised lower, the two will be perceived as more disappointing when taken together. If a current report is better than predicted, but the previous period's revision is negative, the positive response to the current report will be tempered by the downgrade to the older data.

As you might expect, current/revised data scenarios can play out in a variety of ways and to varying degrees. The larger the adjustment to the previous report, the more weight it will have in the interpretation of the current release, according to a general rule.

The key is to be aware of previous-period revisions and then to view them in relation to the new data. Current data reports are given a higher weighting by the market in general, simply because it is the most recent data available, and markets are always looking ahead.

Getting to the heart of the matter

On a headline and core basis, a variety of vital economic indicators are released. The headline reading represents the entire outcome of the indicator, whereas the core reading is the headline reading without particular categories or items. This convention is used in most inflation reports and consumer spending indicators.

Many reporting agencies take out or omit highly variable components like food and energy from inflation reports. For example, in the United States, the consumer price index (CPI) is reported on a core basis, excluding

food and energy, and is referred to as CPI ex-F&E. (When you see "ex-something" in a data report, it stands for "excluding" that item.) The justification for neglecting those items is that they are susceptible to market, seasonal, or weather-related interruptions. Food costs, for example, may fluctuate dramatically owing to drought, floods, or unusually hot or cold weather. The core reading is thought to provide a more realistic picture of structural, long-term pricing pressures, which is what concerns monetary policymakers the most, by removing those components.

When it comes to consumer spending data, the retail sales report in the United States is reported on a core basis (retail sales ex-autos), which is highly influenced by seasonal discounting and sales promotionsn in addition to being somewhat high-ticket items in comparison to other retail purchases The durable goods report is also published on a core basis that excludes transportation

(durable goods ex-transportation), which mostly covers air-craft sales, which are likewise very volatile month to month, as well as extremely large-ticket items that can skew the overall statistics picture.

In most circumstances, markets prioritize the core reading above the headline reading, especially when monetary policymakers have expressed a preference for the core reading. As a result, there can be significant differences between headline data and core data, such as headline retail sales declining 1% month over month but growing 0.5 percent on a core ex-autos basis. Market reactions will, unsurprisingly, be similarly scattered.

Frequently, an initial reaction based on the headline reading is followed by a reaction to the core.

Reports on Market-Moving Economic Data from the United States

Now let's get to the meat of the matter. We go over the important economic data reports that come out of the United States in this part. (The data reports are organized according to the model described earlier in this chapter.) Despite the fact that the United States is the world's largest economy and the US dollar is on one side of 80% of currency trading, our goal here is not to exaggerate the importance of US economic data.

No, we're trying to kill two birds with one stone here:

Introduce you to the primary economic reports published by each major currency country, using data from the United States as an example.

Let you in on the inside scoop on how the market perceives key data reports.

We take you through a country-by-country look at big non-US data reports that don't fit into the main report categories or are too

essential to be overlooked at the end of this chapter reports on the labor market.

Because job creation/destruction is the single most significant driver of overall economic growth, we put the job market at the top of our economic model.

Every major economy publishes labor market updates that include the amount of jobs added/lost, the unemployment rate, or a combination of the two. Because of its importance, employment statistics from the United States is of particular interest considers the world's largest economy and the world's major reserve currency.

The following are the most important employment reports from the United States.

Monthly employment report in the United States

The US jobs report, which is usually released on the first Friday of each month and covers

the previous month, is considered one of the most timely economic indicators. However, it is vulnerable to significant statistical volatility and huge modifications to earlier periods. The following are the report's primary components:

Non-farm payrolls (NFP) change: This is the major number that everyone is talking about. Because it is based on responses from businesses, the NFP change is derived from the establishment survey and represents the number of jobs gained or lost in the previous month. Economists agree that the United States needs to add roughly 200,000 jobs each month only to counteract population increase and maintain a stable unemployment rate.

The initial reaction of the market is based on the difference between the actual and expected change in NFP. The NFP changes from the previous two months have also been altered, and the market's view of the current data will be influenced by these revisions.

Unemployment rate: The number of people looking for work who are unemployed as a percentage of the civilian labor force. The unemployment rate is at a record high derived from a separate survey (the household survey since it includes a jobs change number that may be at odds with the change in NFP), which also includes a jobs change number that may be at odds with the change in NFP.

Increases in the unemployment rate are often seen as an indication of labor market and economic weakness, whilst decreases in the rate are viewed as a positive sign for the labor market and the economy as a whole.

Change in manufacturing payrolls: This indicator measures the number of jobs added or lost in the manufacturing sector and is used to predict near-term production activity.

Average hourly earnings: Measures the change in employee pay and is used to determine whether or not incomes are increasing or decreasing, as well as the

consequences for consumer spending.

Average weekly hours: Calculates the average number of hours worked per week and is used as an approximate indicator of labor demand, with higher weekly hours being viewed as a good for the labor market.

National Employment Report from ADP

The ADP national employment report is produced by the same-named payroll processing corporation (www.adp.com), which collaborates closely with Moody's Analytics. It is released two days before the government's NFP report on Wednesdays at 8:15 a.m. ET (see the preceding section). Only private jobs are measured by ADP, which excludes government hiring. The ADP report is meant to be an alternative assessment of the job market, but it has a shaky track record of accurately forecasting the NFP. as a result

Because of this uncertainty, market reactions

to the ADP are normally minimal and transient, but economists may change their NFP projections based on what the ADP reveals.

Initial jobless claims are filed every week.

Initial jobless claims, which represent first-time filings for unemployment insurance, are reported every Thursday at 8:30 a.m. ET for the week ending the previous Saturday. Between monthly NFP data, initial claims are used to provide interim updates on the overall labor market. On a week-to-week basis, adjustments in initial claims can be erratic – there are a lot of snags.

Weather, strikes, and seasonal labor patterns can all generate spikes in claims, therefore analysts use a four-week moving average of initial claims to account for one-time events. Sharp rises or decreases in initial claims data, on the other hand, will draw the market's attention, generating a market reaction on their own, as well as downgrading or

upgrading expectations for forthcoming monthly NFP reports.

Continuing claims, which is a measure of the overall number of people receiving unemployment benefits, excluding first-time filers, is a second portion of the weekly claims report. Continuing claims are used by the market as another indicator of labor market circumstances. Increases in continuing claims usually indicate a worsening job market, since unemployed people are having a harder time finding work and are staying on unemployment insurance for longer periods of time. Decreases in continuing claims are also considered as a sign of improved job market conditions, as people are presumably finding work more easily.

Reports on consumer data

Because personal spending accounts for two-thirds or more of the economies of most industrialized countries, consumer behavior has a significant impact on the economy's outlook and the direction of interest rates, both of which are important drivers of FX rates. The following are the most important data reports from the United States that focus on personal consumption.

Consumer perceptions

The market's attempts to interpret future consumer activity and, with it, the economy's overall direction, are based on consumer psychology. The theory is that if you're happy, you'll spend more, and if you're worried, you'll spend less. Even though there is little correlation between how customers say they feel and how they will really spend, the market likes to pay heed to consumer confidence indicators.

In reality, fluctuations in gasoline costs, the stock market's performance, and current employment data all have an impact on consumer attitude. Money-in-the-pocket measures such as average weekly earnings, personal income and spending, and retail sales data are more dependable predictors of consumer spending. Nonetheless, the market tends to react to the main sentiment gauges, even if only in the short term, with improving sentiment generally supporting the home currency and lower sentiment generally harming it. The most important confidence indicators are:

The Conference Board's Consumer Confidence Index is a monthly report that includes the expectations index (looking six months ahead) and the current-situation index. Households are asked about their expectations for overall economic conditions, employment, and incomes in the surveys.

The University of Michigan consumer sentiment index is published twice a month, with a preliminary reading in the middle of the month and a final reading at the beginning of the following month.

ABC Consumer Confidence: Each Tuesday evening, ABC releases a consumer confidence report. You can utilize the weekly ABC confidence report to adjust your expectations for the next monthly consumer confidence and University of Michigan reports.

If market forecasts predict an increase in the Michigan or Conference Board's consumer confidence indexes, but the previous two or three weeks of the ABC poll show confidence is decreasing, you can bet the monthly surveys will disappoint.

Personal earnings and expenditures

These two monthly reports are always released at the same time and give us the best indication of how much money is going into and out of consumers' pockets. These reports are used by the market to gain an update on the situation.

The consumer's health in the United States and the future prospects for personal consumption All wages and salaries, as well as transfer payments (such as Social Security or unemployment insurance) and dividends, are included in personal income. For all sorts of individual outlays, personal spending is based on personal consumption expenditures.

Because future expenditure is substantially connected with income, personal income is

closely monitored as a leading indicator of personal spending. The more personal income rises, the more hopeful the spending outlook becomes, and vice versa. It's vital to emphasize, however, that inflation-adjusted salaries are the most relevant factor. If incomes only stay up with inflation, the outlook for spending is less favorable.

Sales in the retail sector

The key indication of personal spending in the United States is the monthly advance retail sales report, which covers almost every transaction Americans make, from gas station fill-ups to dinner and a movie. Retail sales are tracked.

both in terms of the headlines and in terms of the core (which excludes automobile purchases). The market is primarily concerned with the core number in order to understand how consumers are acting, but significant

strength or weakness in the auto industry is not overlooked. The advance retail sales report is a preliminary estimate based on survey samples that can be significantly updated based on new information.

Retail sales reports are prone to a number of distortions, the most common of which is weather. Bad weather, such as big storms or periods of unusually cold or hot weather, can limit customer mobility and disrupt shopping patterns, resulting in lower retail sales during the impacted time. Sharp price swings in gasoline can have deceptive consequences, such as a perceived rise in retail sales due to the higher per-gallon price, but overall non-gas retail sales are lowered or displaced by the higher outlays at the pump.

Orders for durable goods

Durable goods orders, which include both individuals and businesses, are another important monthly measure of consumption. Manufacturers of durable goods are measured by the number of orders they receive for items that are expected to last at least three years. Durable goods is one of the most volatile data series out there, with multiple percentage swings (rather than 0.1 percent or 0.3 percent shifts) between months becoming the rule rather than the exception. Excluding transportation, or ex-transportation, durable goods are reported on a headline and core basis (mostly aircraft).

Durables, such as washing machines and furniture, are typically larger-ticket purchases, thus they're viewed as a leading predictor of overall consumer spending. Big-ticket purchases are more likely when individuals are flush with cash and confidence. If customers are unsure or money is scarce,

The first purchases to be postponed are those

with a hefty price tag. Furthermore, firms prefer to concentrate their spending in the final month of each quarter, distorting preceding months and exaggerating the last.

Indices of the housing market

Because residences are often the greatest asset on a household's balance sheet, the real estate or housing market is a primary driver of consumer spending. The wealth effect (the richer you feel, the more inclined you are to spend) is seen to encourage consumption, but falling housing values can be a substantial drag on personal spending. The U.S. real estate bubble burst in 2006–2007, triggering the Great Financial Crisis (GFC) and recession of 2008–2009.

The housing statistics in the United States has become a big drag on consumer spending in the United States. One of the lingering effects of the financial crisis is that markets continue to monitor the housing market in the United States as a barometer of economic health. A

sluggish housing market can send shivers through the dollar and stock markets in the United States.

There are a slew of monthly housing market reports to keep track of the industry, depending on whether the properties are new or old.

The National Association of Realtors publishes data on existing-home sales (NAR). Pre-existing home sales (including condos) account for the majority of residential real-estate activity, accounting for around 85% of total home sales. The market looks at the monthly change in existing-home sales, which are published on an annualized basis. The inventory of unsold homes and median home prices are crucial indicators of how the housing market is changing. After a closure, existing-home sales are counted. Pending house sales are treated as a separate report.

Existing-home sales are a leading sign. When a contract to buy an existing home is signed,

it is counted as a pending home sale.

New-home sales are exactly what they sound like: brand-new homes and condos that have been built for sale and are recorded on a yearly basis. Although new-home sales account for around 15% of all residential home sales, they were the fastest rising during the recent real-estate boom and have since suffered a sharp fall in activity. Because new-home sales are counted when a contract to buy a new house is signed, contract cancellations (which aren't reported) may result in lower actual sales than previously reported.

Housing starts are the number of new home construction starts reported on an annualized basis for each month. Housing starts are a leading sign of new-home sales, but they've also been used to gauge builder morale in recent years as builders aim to reduce inventories of unsold new houses.

Building permits represent the beginning of

the entire new-housing cycle, and they are reported monthly alongside building starts. Building permits are required before new home building can begin, thus they're another leading predictor of housing starts and sales.

Data reports at the corporate level

Getting a handle on how businesses are doing is a key indicator of the economy's health, which influences interest rate expectations and the overall investment environment. The data reports that follow provide insight into how businesses are responding at the corporate level.

Purchasing Managers Index and Institute for Supply Management

Based on surveys of purchasing managers, the Institute for Supply Management (ISM) calculates many regional and national indices of current business conditions and future outlooks. The ISM index is based on a boom/bust scale with 50 as the tipping point;

a number above 50 implies expansion, while a reading below 50 suggests contraction.

The most important ISM reports to pay attention to are:

Because the Chicago area and the Midwest region are still significant centres of manufacturing activity in the United States, the Chicago Purchasing Managers Index (PMI) remains the key regional manufacturing activity index. The Chicago PMI is also the first of the national PMIs to be released, and the market often regards it as a leading indicator of the broader national ISM manufacturing report, which is usually released a day after the Chicago PMI.

ISM nonmanufacturing report: The ISM nonmanufacturing report is a monthly ISM report that looks at the other 80% of the economy in the United States, particularly the

service sector. Although the ISM manufacturing report receives greater attention, it is the ISM non-manufacturing report that should be studied.

The PMI surveys, which are compiled by a data collection organization called Markit, are the European and Chinese equivalents of the ISM reports. Markit has been producing an index for the United States since 2011, and it is released at the end of each month. Although it is not as popular as the ISM survey, the fact that it is released before the ISM survey has helped it gain popularity, albeit it still has a long way to go before it overtakes the ISM as the market's preferred business survey.

Federal Reserve indexes by region

Several Federal Reserve district banks conduct monthly surveys of business sentiment in their respective districts, with a focus on the manufacturing sector. The regional Fed indices are examined both on

their own and in relation to following national sentiment surveys, such as the ISM index. The primary index reading is a subjective response to general business conditions, with readings above zero indicating that things are getting better and readings below zero indicating that things are becoming worse. The following are the primary regional Fed metrics to keep an eye on:

The Philadelphia Fed index, which covers the manufacturing sector in the United States, is usually the first of the major Fed indices to be released each month.

Pennsylvania, New Jersey, and Delaware are three states in the United States. New orders, employment, inventory, and prices are among the subindices included in the Philly Fed index.

New York Empire State index: Evaluates the current and six-month outlooks of New York state manufacturing.

The Richmond Fed manufacturing index is a composite index that covers the Middle Atlantic states and is based on new orders, production, and employment.

Production and capacity utilization in industry

Industrial production is a monthly indicator of changes in the broader economy that measures the quantity of output generated by the nation's factories, mines, and utilities. Because the manufacturing sector is still seen as a leading indicator for general business cycles, changes in this sector could indicate a larger shift in the economy. The capacity utilization report compares actual production to a theoretical maximum capacity and provides recommendations.

is investigated to see what it reveals about inflationary pressures. High levels of capacity utilization, above 80%, may signal the onset of price pressures and serve as a warning signal to policymakers. Lower capacity

utilization could indicate a lack of inflationary pressures, allowing monetary policymakers to maintain interest rates low.

The Federal Reserve's Beige Book

The Beige Book, so named because of the color of its cover, is a compilation of regional economic evaluations from the Federal Reserve's 12 district banks, released roughly two weeks before each FOMC policy-setting meeting. The regional Fed banks create their summaries based on surveys and anecdotal reports from local business leaders and economists, and the report is then summarized by one of the Fed district banks, which all provide the report alternately. The Beige Book is intended to serve as the foundation for the upcoming FOMC meeting's economic discussions.

Markets look at the major findings of the Beige Book to get a sense of how the economy is progressing and what topics the

FOMC might focus on.

A typical Beige Book report might include the following generic observations: The majority of districts reported stable or somewhat expanding retail sales; a few districts reported manufacturing activity reductions; some districts reported increased labor market pressure and rising pay demands; and all districts reported a dramatic downturn in real-estate activity.

The key for the market is to evaluate the report's core themes, such as:

Is the economy growing or shrinking? How quickly, and how widely?

Which industries are the most powerful, and which are the most vulnerable?

Is there any evidence of inflation?

What is the state of the labor market?

Because the Beige Book is released in the afternoon (New York time), when liquidity is weak, it can elicit a stronger reaction than usual if the tone or conclusions diverge dramatically from what markets had expected.

Reports on structural data

The big picture, macroeconomic data that depicts the longer-term economic future is depicted in structural data reports. What is the economy's structure? Is it enlarging or shrinking? If so, how quickly? Is inflation in check, or are prices increasing too quickly? Is trade benefiting or hurting the economy? These reports have the potential to be one of the most important influences on central bank monetary policy.

Inflation meters

Inflation reports are used to track overall changes in the price levels of products and services, as well as to help forecast interest rates. Inflationary pressures are likely to be met with higher interest rates by central bank policymakers aiming to contain it, whereas moderated or declining inflation readings indicate lower interest-rate expectations.

There are a variety of inflation reports available, each focusing on a different cause of inflation or stage of the economy where price changes are occurring. Inflation reports are published in the United States and other nations on a headline (total) and core basis (which excludes food and energy to minimize distortions from these volatile inputs). Inflation indexes track monthly changes (abbreviated MoM, for month-over-month) to track short-term changes, as well as year-over-year changes (YoY, for year-over-year) to track the longer-term rate of inflation. The most important inflation reports to keep a watch on are the following:

The consumer price index (CPI) is what most people think of when they hear about inflation. The Consumer Price Index (CPI) calculates the cost of a basket of products and services at the consumer or retail level, or the prices we pay. The CPI is regarded as the pinnacle of inflation.

The producer price index (PPI) tracks changes in prices at the producer or wholesale level, or what businesses charge each other for goods and services. The PPI is a leading predictor of overall inflation since it looks at upstream inflation by processing stage.

Personal consumption expenditure (PCE): The PCE is similar to the CPI in that it tracks changes in the price of a basket of goods and services at the individual level. The PCE, on the other hand, is favoured by the Federal Reserve as its primary inflation indicator since the PCE basket's composition varies more frequently than the CPI, reflecting changing consumer tastes and behavior.

Who are we to argue with the Fed if the more dynamic basket is the one to watch? The Fed usually refers to core PCE figures when it talks about an inflation objective or a tolerable level of inflation.

Prices Paid Index from the Institute for Supply Management (ISM): Subcategories of the national and regional purchasing managers indices report on the level of prices paid and received by businesses. The prices-paid component usually gets the most attention as another producer-level indicator of price pressures, which the PPI is likely to reflect.

GDP (gross domestic product) is a measure of

The gross domestic product (GDP) is a metric that represents the overall amount of economic activity in a country over a set period of time, usually quarterly and adjusted for inflation.

to account for inflation The main growth rate of an economy is defined as the percentage change in GDP from one period to the next. If GDP increased by 0.5 percent in the first quarter of a year, that means the economy grew by 0.5 percent.

% in the first quarter as compared to the previous fourth quarter's output. GDP is often calculated quarterly but reported in annualized terms. A 0.5 percent quarterly GDP gain would be reported as a 2% annualized rate of growth for the quarter (0.5 percent x 4 quarters = 2%). When evaluating relative growth between economies, annualized rates are useful.

GDP is provided on a quarterly basis in most nations, thus it serves as a big-picture reality check on total economic growth. What the GDP numbers show will have a big impact on the market's economic outlook. Better-than-expected growth may prompt discussions

about the need for higher interest rates, but steady or slower GDP growth may indicate that monetary policy may be eased in the future.

At the same time, GDP reports cover a rather distant economic past - a quarter's GDP report is normally released in the middle of the next quarter and looks back three to four months. As a result, market expectations are always shifting in response to new data releases, so don't get too hung up on GDP for too long after it's been released.

Balances of trade and current accounts

Trade and current account balances are two of the most essential data for forex markets since they have direct and potentially long-term currency implications:

The difference between a country's exports and imports is measured by the trade balance.

A trade deficit occurs when a country imports more than it exports; a trade surplus occurs when a country exports more than it imports. Prior periods are subject to change; trade balances are presented on a monthly basis.

The current account balance is a larger measure of international commerce that includes both financial and goods and services trade. A country's current account is either in deficit or surplus, indicating whether it is a net borrower or lender to the rest of the world. Net borrowers from the rest of the world are countries with current account deficits, whereas net lenders are countries with current account surpluses. Because the monthly trade balance makes up the majority of the current account balance, traders have a solid idea of what to expect in current account statistics.

Those with chronically substantial trade or current account deficits see their currencies

depreciate against other currencies, whereas countries with trade surpluses see their currencies strengthen. The basic premise is that a deficit country's currency is in lower demand (it's sold to buy more imported goods) than a surplus country's currency (it's bought to pay for domestically produced items).

The US dollar, for example, has been under pressure for several years before to the GFC as a result of widening (rising) trade and current account deficits. However, the amount of the deficit stopped growing in late 2006, reducing some of the pressure on the dollar. However, because the deficit is significant in absolute and historical terms, the US trade deficit remains a major dollar negative, despite the fact that increased oil production in recent years may cause the trade deficit to reduce sharply in the future, making the trade deficit a dollar positive.

Budget shortfalls and government debt

Many major economies, including the United States, Europe, the United Kingdom, and Japan, have significant debt and deficit levels as a result of the Great Recession. Fears of a debt restructure (changing the conditions of a bond) or default can substantially damage confidence in a national currency, leading to a prolonged period of weakness, as the euro did during the European debt crisis in 2010.

Although most national governments provide a debt report every year, there is no single data release that effectively covers the debt conditions in major economies.

Statement of the monthly budget Instead, a variety of news and data flows are used to track the debt/deficit situation in significant countries:

Budget and deficit forecasts: These are the greatest way to remain on top of changing

fiscal conditions, and they are issued by national governments and the IMF.

CDS (credit default swaps) and government bond yields, spreads, and CDS (credit default swaps): As investors' concerns about governments' creditworthiness grow, they sell those countries' bonds, raising yields. Another risk indicator is yield spreads, which are the differences between the yields of two different securities.

a troubled country and a safer alternative Credit default swaps are a type of insurance that compensates investors if a company defaults; the larger the credit default swap, the bigger the perceived risk.

Government debt auctions: When governments try to borrow in capital markets, they may be turned down due to a lack of demand or a price that is too high, resulting in a default. Keep an eye out for demand indications such as the bid/cover ratio, which gauges the number of bids filed in relation to

the amount of money being issued (the higher the better), and pricing (the higher the yield demanded, the greater the risk).

Major credit rating agencies, such as Moody's, S&P, and Fitch, may issue periodic credit evaluations of national debt, potentially implying a downgrade. Investors may leave if a country's credit rating is downgraded, raising borrowing prices and increasing the danger of default.

The Most Important International Data Reports

We covered the major economic reports in the preceding sections, using U.S. data to explain what each report measures and how the market evaluates them. Other major national economies' main data reports mostly resemble those of the United States, with slight changes in calculation methods or reporting. In other words, the CPI data from the United Kingdom is regarded as a measure

of consumer-level inflation in the same way that the CPI report from the United States is regarded.

However, many national data releases do not have an equivalent in the United States, and others are highly followed in local markets and necessitate particular attention. Beyond what we covered earlier, we highlight the important data reports of other national economies in the following sections.

Eurozone

The Eurozone's primary statistical reports are very comparable to those from the United States. The main difference is that national economic data from individual European countries is published alongside Eurozone-wide reports from Eurostat or the European Central Bank (ECB).

The forex market relies on statistics that span the entire Eurozone, such as Eurozone industrial production and CPI, because the Eurozone has a shared currency and central bank. Individuals in particular

The market focuses on statistics from the largest Eurozone economies, primarily Germany and France, in national reports. Keep an eye on all of the important reports that come out of those nations. They can elicit significant reactions because they are thought to be leading indications of Eurozone data. If German industrial production falls, for example, it could indicate that whole Eurozone industrial production will fall as well. Since the Eurozone sovereign debt crisis, the market has tended to focus on how countries are handling their debt.

Greece, Ireland, and Portugal, who received bailouts, are doing well. A Greek unemployment data, believe it or not, has been known to affect the market!

The primary European confidence indicators are the only European reports that may go unnoticed due to their odd titles. Depending on how they compare to projections, these news can elicit significant reactions:

The ZEW survey analyzes institutional investors' and analysts' growth projections for the next six months. The survey covers Germany as well as the entire Eurozone.

IFO and GfK surveys: IFO is a corporate sentiment survey that asks firms all throughout Germany about their present feelings and how they are doing business.

Over the following six months, the situation is projected to change. The GfK Consumer Confidence Survey is a monthly indicator of consumer confidence.

Purchasing Manager Indexes (PMIs): Similar to the Chicago PMI in the United States, a data firm called Markit produces monthly

PMIs for the manufacturing and service sectors for Germany, France, and the entire Eurozone. The reports are released in two stages: preliminary and final.

Confidence in the Eurozone: The European Commission (EC) conducts monthly confidence polls in a range of sectors, including consumer, services, manufacturing, and overall economic morale.

Japan

When looking at data from Japan, keep in mind that the country's economy is still strongly reliant on exports. Because of their importance in the economy, pay extra attention to industrial production and manufacturing data in addition to the standard reports. Since 2012, the Bank of Japan has been attempting to combat the prospect of deflation, which has resulted in CPI data taking on new meaning.

In recent years, it has taken on a new meaning. Keep an eye on the following reports in addition to the normal reports:

The tankan index is a measure of how well a tankan performs. The Bank of Japan conducts a quarterly poll of business outlooks known as the Tankan survey (BOJ). The survey yields

There are four readings: current conditions and future perspective from large manufacturers and large non-manufacturers. The Tankan survey's big all-industry capital expenditures survey is a key indicator of capital spending and is frequently the centerpiece of the overall Tankan survey.

Monthly trade balance: Japan's monthly trade balance is almost usually positive. When the trade surplus is perceived to be excessively great, it can indicate the soundness of the export industry as well as potential political ramifications against excessive JPY

weakness.

Monthly sentiment gauges of industrial and service-sector enterprises, including all-industry and tertiary industry (services) indices.

United Kingdom of Great Britain

Be on the lookout for the following releases, in addition to the regular large government-issued data reports, which can frequently cause dramatic GBP reactions:

Bank of England (BOE) Minutes: The vote results for the most recent decision are released two weeks following each Monetary Policy Committee (MPC) meeting. When the policy discussion or vote reveals a split leaning in the direction of an interest rate change, market expectations and the GBP are frequently upended.

BOE Quarterly Inflation Report: The BOE's

estimates for growth and inflation over the next two years can have a substantial impact on the interest rate outlook and the GBP, despite the fact that it only comes out once a quarter.

There will also be a press conference, which will be eagerly followed by the markets.

Purchasing Manager Indexes (PMIs): Markit, a data company, publishes monthly PMIs for the manufacturing, construction, and service industries.

GfK consumer confidence and Nationwide consumer confidence: GfK, a U.K./European marketing firm, and the Nationwide Building Society, a U.K. mortgage lender, both publish monthly consumer confidence gauges.

The Confederation of British Industry (CBI) publishes two monthly reports: a distributive trades survey and an industrial trends survey. The industrial trends survey is a survey of manufacturers' current and future views,

while the distributive trades survey is a measure of retail and wholesale sales.

British Retail Consortium (BRC) retail sales monitor and shop price index: The British Retail Consortium, a private trade organization, publishes two monthly reports. Another indicator of retail sales is the retail sales monitor, and the shop price index measures inflation at the retail level.

Press conferences of the European Central Bank

After each policy meeting, the European Central Bank (ECB) was the first of the major central banks to hold news conferences. The Federal Reserve and the Bank of Japan have followed suit; however, the Bank of England has remained defiant, releasing nothing after a policy meeting unless it has modified policy, in which case it issues a brief statement explaining its decision.

The president of the European Central Bank gives a statement that analyzes the economic scene and forecasts the future. Because the ECB only has one mandate — to maintain price stability, rather than fight inflation or deflation — the inflation outlook is the most essential part of the statement. The president of the European Central Bank then answers questions from the press, which he does frequently.

Market expectations on ECB policy are addressed. The president's remarks during the Q&A session have the ability to drastically influence market perceptions, causing large swings in the euro. For example, the ECB may have held rates stable and identified inflation risks are contained, but if the ECB president says that inflation risks have gone down, markets may interpret this as a signal that the ECB is ready to ease monetary policy soon, and the euro may drop. The ECB will begin publishing the minutes of its meetings in early 2015, which will include individual

members' voting decisions. It had not done so until 2015, in contrast to other central banks, which typically disclose minutes a few weeks following a policy meeting.

Canada

In many ways, Canadian statistics resembles that of the United States, however there are a few extra key Canadian indicators to keep an eye on:

International securities transactions: A monthly report that roughly corresponds to the US Treasury's TIC report (see "Trade and current account balances" earlier in this chapter), detailing net investment flows into and out of Canada. High inflows usually help the CAD, whereas high outflows usually damage it.

The Richard Ivey School of Business publishes the Ivey Purchasing Manager

Index, which is a major monthly indicator of Canadian business outlooks. Purchases, employment, inventory, deliveries, and prices are all included in the report.

Australia

Data from Australia has a significant impact on the Australian dollar, similar to how data from the United Kingdom has an impact on the pound. Keep a watch out in particular for

RBA rate decisions and minutes: The RBA's statement following a rate decision, as well as the minutes released two weeks later, can have a significant impact on interest rate expectations and the AUD.

Two different monthly mood indicators from two of Australia's main banks: Westpac consumer confidence and National Australia Bank (NAB) business confidence.

New Zealand is a country in the Pacific

Ocean.

For the Kiwis, the data from New Zealand is similarly intriguing. Keep a watch on the following Kiwi-specific statistics in addition to the main data reports and Reserve Bank of New Zealand (RBNZ) statements:

NZ Card Spending: This monthly study examines purchases made with credit, debit, and store cards in New Zealand, providing a different perspective on retail sales.

ANZ Consumer Confidence: ANZ Bank conducts a monthly study of consumer sentiment.

China

After the United States, China overtook Japan as the world's second largest economy in early 2011. Over the previous decade, China's growth has been nothing short of phenomenal, and it has played a critical part in the global recovery following the Great

Recession. As a result, Chinese data has gained greater prominence, with global markets frequently hurting from weaker reports or rising on stronger ones.

The prospect for Chinese growth has an impact on global markets through a variety of avenues. Stronger Chinese growth is beneficial for global trade and has a positive impact on global stock markets. China's growth trajectory has an impact on commodity demand, with consequences for particular commodity markets (China just overtook the United States as the world's top oil consumer) and commodity-producing countries like Australia and South Africa. As a result, Chinese development prospects are increasingly driving financial markets around the world.

In terms of economic reporting, the trade surplus, industrial production, manufacturing PMIs, and quarterly GDP are the most

important, with the trade surplus, industrial production, manufacturing PMIs, and quarterly GDP being the most important.

Chinese consumers are increasingly recognized as critical to the economic prospects of developed countries, with indicators of rising imports and increases in retail sales viewed as positive for global economy.

Individual traders cannot access the Chinese yuan because it is still managed by the Chinese. However, because of China's increased prominence in the global economy, its data can have an impact well beyond its boundaries. Because China is Australia's largest trading partner, this is extremely important for the Australian dollar.

UNDERSTANDING THE MAJOR CURRENCY PAIRS

Examining the biggest currency pairs' trading fundamentals

Calculating the Trading Costs

Understanding price fluctuations

Adapting trading tactics to the particular currency pair

The big currency pairs EUR/USD, USD/JPY,

GBP/USD, and USD/CHF account for the vast majority of trading volume. These are the currency pairs.

The most closely monitored barometers of the overall forex market, they account for over two-thirds of daily trading volume. When you hear about the dollar gaining or dropping, it's usually in relation to one of these currencies.

Despite the fact that these four currency pairs are frequently lumped together as the major currency pairs, each pair reflects a distinct economic and political relationship. We examine the underlying drivers of each currency pair in this chapter to understand what moves them. We also look at the market's quotation conventions and what they mean in terms of margin trading.

Although it is critical to comprehend why a currency rate changes, we believe it is equally critical to comprehend how distinct pairs'

rates change. The majority of currency trading is done on a relatively short-term basis, ranging from a few minutes to a few days. Understanding price action (how a currency pair's price fluctuates in the very short term) is therefore a critical component of any trading strategy.

Keep in mind as you read this chapter that our observations are not hard and fast rules. There are no hard and fast rules in any market, anyplace, at any time, as far as we know. Consider them to be general guidelines that apply most of the time. When it comes to implementing our insights to real-world trading, you'll have to assess the entire circumstances to see if they make sense. You'll be better able to anticipate, interpret, and respond to market changes if you have a baseline of currency pair behavior.

When our insights don't hold water, the other side of the coin is that there is information

content. If the market generally reacts in a predictable manner to specific occurrences, but not this time, it's a sign that something else is at work (usually bigger). And that can be even more useful information for traders.

EUR/USD: The Big Dollar

The most actively traded currency pair in the global forex market is EUR/USD. EUR/USD is traded by everyone and their brother, sister, and cousin. This will come as no surprise to anyone who has traded in the currency market, because if you have, you have almost certainly traded EUR/USD.

The big banks are in the same boat. To deal with the volume in this currency pair, every large trading desk has at least one, if not several, EUR/USD traders. In contrast, less liquid currency pairs such as USD/CAD or AUD/USD may not have a dedicated trader on trading desks. All of those EUR/USD traders add up to a lot of market interest,

which helps to boost overall trading liquidity.

EUR/USD trading basics

The EUR/USD currency pair puts the US dollar against the euro, the Eurozone's single currency. The Eurozone is a collection of European countries.

the European Union (EU), which abolished national currencies in 1999 and replaced them with a unified single currency. The Deutsche mark, the Italian lira, the French franc, and nine other European currencies all vanished at midnight on January 1, 1999, and the euro was born.

The adoption of a common currency was the culmination of the European Union's founding members' efforts to unify their financial systems. The nations committed to adhere to fiscal policy limitations, such as limiting the ratio of national budget deficits to gross domestic product (GDP), when they

adopted the single currency. (Some argue that the sovereign debt crisis of 2010 made a mockery of these rules.) In addition, the nations delegated monetary policy (interest rate setting) to the newly formed European Central Bank (ECB).

Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Luxembourg, Malta, the Netherlands, Portugal, Slovakia, Slovenia, and Spain are the countries that use the euro as of this printing.

The sovereign debt crisis, which hit the Eurozone in 2010, was its first big test. Some states have amassed unsustainable financial burdens and were forced to seek bailouts. Greece was the first member state to fall apart, and Ireland, Portugal, and Cyprus have all needed financial assistance in recent years.

The situation had calmed at the time of writing, however the road to recovery for some of the countries involved is still long.

The sovereign debt crisis has been the Eurozone's defining event this decade.

On a more positive note, despite the sovereign debt crisis, the Eurozone has continued to grow in recent years, bringing the population of the monetary union to over 300 million people. Despite the fact that its economy has suffered as a result of the sovereign debt crisis, its total GDP is roughly equivalent to that of the United States.

Using the numbers to trade EUR/USD

The EUR/USD currency pair is usually quoted in terms of the number of USD per EUR. A EUR/USD rate of 1.3000, for example, means that $1.30 buys €1.00.

The EUR/USD trades inversely to the USD's total value, which means that when the EUR/USD rises, the euro strengthens and the dollar weakens. When EUR/USD falls, the

euro becomes weaker and the dollar becomes stronger. You'd be looking to sell EUR/USD if you thought the US dollar was going to rise. You'd be looking to buy EUR/USD if you thought the dollar was going to weaken.

The euro serves as the base currency, while the US dollar serves as the secondary or counter currency. That is to say,

EUR/USD is a currency pair that is traded in euros. Standard lot sizes in online currency trading platforms are €100,000, mini lot sizes are €10,000, and micro lots are €1,000.

The pip value, often known as the minimum price fluctuation, is expressed in US dollars.

Profit and loss are calculated in US dollars. Each pip in a standard lot position is worth $10, whereas each pip in a tiny lot position is worth $1. Each pip is worth $0.10 for each micro lot.

In most online trading systems, margin calculations are made in US dollars. To trade a one-lot position for $1000 at a EUR/USD rate of 1.3000,

If you have €100,000, you'll need $1,300 in available margin (based on 100:1 leverage). Of course, the calculation will change over time as the EUR/USD exchange rate fluctuates. A higher EUR/USD rate will necessitate more USD in margin collateral, whereas a lower EUR/USD rate will necessitate less.

Swimming in a sea of liquid

Other major currency pairs can't match EUR/liquidity. USD's As a result, trade spreads in the EUR/USD tend to be narrower. Typical EUR/USD market spreads are less than one pip, though this might fluctuate. Spreads have reduced dramatically over the years, and you can now trade most major currency pairs for as little as 1 pip.

According to a 2013 survey of the foreign exchange markets conducted by the Bank for International Settlements (BIS), EUR/USD accounted for 33% of global daily trading activity. This has decreased in recent years as a result of some investors diversifying away from the single currency as a result of the sovereign debt crisis. The yen has been one of the winners. The USD/JPY exchange rate increased by 4% to 23% in 2013.

Liquidity in the EUR/USD market is depending on a number of basic factors, including:

Global trade and asset allocation: After the United States, the Eurozone is the second largest economic bloc in the world. Not only does this result in large commercial trade flows, but it also makes Eurozone financial markets and the euro the preferred destination for massive international investment flows. For the first time in history, the overall value of European stock markets topped the value of US equities markets in April 2007.

Central bank credibility: The ECB has established itself as an effective organization in combating inflation and maintaining currency stability in the eyes of global investors. It has also been credited with helping to stabilize the currency bloc amid the sovereign debt crisis, which has helped to improve its image in recent years.

Enhanced status as a reserve currency: Central banks all over the world keep foreign currency reserves in order to support their own currencies and maintain market stability. The euro is gaining traction as a worldwide reserve currency alternative to the US dollar, albeit progress has slowed in recent years due to the start of the sovereign debt crisis.

When it comes to speculating on the overall direction of the US dollar in response to news or economic data from the US, the euro is the key foil. Traders typically sell the dollar when negative economic data from the United States is released, which begs the

question, "Against what?" Many people like the euro simply because it is available. It also helps because it's the most liquid option, making entry and exit simple.

This isn't to argue that the EUR/USD only reacts to economic data or news from the United States. Eurozone news, politics, and data, on the other hand, can influence EUR/USD as much as, if not more than, US data, as shown during the sovereign debt crisis.

The EUR/drivers USD's might be cyclical. Traders will react to European news and data on any given day, adjusting prices for several hours until U.S. data is announced.

Observing data reports

The forex market is increasingly ignoring country-specific economic information, such as Dutch retail sales or Italian industrial production, in favor of Eurozone aggregate

economic data. National economic reports from Germany and France, on the other hand, can still register with markets because they represent the two countries.

largest economies in the Eurozone Here's a rundown of the key European data reports and events to watch:

Interest rate decisions by the European Central Bank (ECB) and press conferences following ECB Central Council meetings. This is when the president of the European Central Bank explains the ECB's reasoning and provides information on the future path of interest rates. It contains a press conference by the president of the European Central Bank.

ECB officials and individual European finance ministers give speeches.

Reports on the EU-harmonized Consumer Price Index (CPI) and national CPI and Producer Price Index (PPI).

Indicators of economic sector confidence from the European Commission.

Three private economic research organizations known by their acronyms: Ifo, ZEW, and GfK, conducted separate consumer and investor sentiment surveys. The Markit mood surveys are also carefully watched since they provide an up-to-date picture of confidence across the economy.

Production in the industrial sector.

Sales to the general public.

Unemployment rate is a measure of how many people are unemployed.

Sales of sovereign debt. These are now being extensively monitored, particularly in Europe's smaller, financially vulnerable countries like Greece. Despite the fact that the sovereign debt issue has subsided in recent years, a failed bond auction might reignite sovereign anxieties, putting pressure

on the EUR.

EUR/USD Trading Patterns

The EUR/USD pair is good for both short-term and long-term traders because to its high liquidity and tight trading spreads. The price action in EUR/USD has a number of characteristics that traders should be aware of.

Tick by tick trading

In normal market conditions, the EUR/USD trades tick by tick, as contrast to other currency pairs, which have far stronger short-term price swings of several pips. If the EUR/USD is trading at 1.2910/13, traders will be trying to sell at 13, 14, and 15 and higher, while buyers will be looking to purchase at 9, 8, 7, and lower.

Other, less liquid currency pairings, such as the AUD/USD and USD/CAD, typically

fluctuate in a much more erratic manner, which is reflected in their greater price spreads.

There are fewer price surges and less price gaps.

In short-term trading, the EUR/liquidity USD's depth minimizes the quantity of price surges or price gaps. In the course of routine trading, a price jump refers to a rapid movement in prices over a relatively short time frame (approximately 50 pips or more). A price gap occurs when prices change rapidly over a larger price range, usually in response to a news event or data release.

Don't get us wrong: price gaps and spikes do happen in EUR/USD, as anyone who has traded around data releases or other news events will confirm. However, price jumps/gaps in the EUR/USD are generally caused by news/data releases and the breaking of important technical levels, events that can usually be predicted ahead of time.

As a caution, during the sovereign debt crisis, there were substantial price differences as concern about the Eurozone's future hung in the balance. Trading circumstances had mostly reverted to normal at the time of writing.

This is in contrast to other major currency pairs, where a one-time market flow, such as a portfolio manager selling a big amount of AUD/USD or a USD/CAD stop-loss order being activated, can cause short-term price gaps. When price gaps do appear in EUR/USD, they are usually smaller than in other pairs.

Filling and backing

When prices rise quickly in one direction, they tend to come to a short-term halt when the market is flooded with opposing interest. For example, suppose EUR/USD went higher from 1.2910/13 to 1.2922/25 in a pretty

orderly pace over two minutes, with no price gaps. Short-term traders who were long for the rapid 12-pip move higher will try to exit and sell when the price rise upward slows.

As selling interest enters the market and prices begin to fall, other slow-moving longs will begin hitting bids (selling), causing prices to fall. Traders who missed the swift rise or were not able to stay as long as they wanted would enter their purchasing interest in the market. Other purchasers may wait and place their buying interests at slightly lower levels if they detect selling interest. Backing and filling is the term for the back-and-forth consolidation that occurs after a short-term price fluctuation. Though it can happen in both up and down price movements, the price backs up and fills the short-term movement.

Backing and filling is extremely prevalent in EUR/USD price action, and it tends to be more substantial than in most currency pairings, implying that a larger portion of the

directional move is retraced. Take a look at Figure 8-1 to see how backing and filling should be done. When EUR/USD does not back and fill as expected, it indicates that the directional move is stronger and has more interest behind it.

Graph 8-1:

After short-term directional changes, a one-minute EUR/USD chart shows periods of backing and filling price action. Backing and filling are also seen in price drops.

signal as a source (www.esignal.com)

Prolonged technical level tests

EUR/USD can test even the most disciplined traders' patience when trading near technical support and resistance levels. We mention this because technical levels on the EUR/USD can be tested for hours (an eternity in forex markets) or even days. (For a primer on technical analysis, see Chapter 10.)

This is due to the high level of interest and liquidity that characterizes the EUR/USD market. When technical levels are used, all of these points of view come together in the form of market interest (bids and offers). As a result, there's a lot of market interest that needs to be absorbed at technical levels, which can take a long time.

Using the GBP/USD and USD/CHF exchange rates as leading indicators

Given the high two-way interest in EUR/USD, determining whether a test of a technical level will result in a breakout or a rejec- tion can be challenging. Professional EUR/USD traders constantly keep an eye on GBP/USD and USD/CHF, as they tend to be leading indications for larger EUR/USD and dollar swings in general, to see if a test of a technical level in EUR/USD would lead to a break.

EUR/USD is likely to test similar technical levels to GBP/USD and USD/CHF (for example, daily highs or analogous trend-line resistance) if GBP/USD and USD/CHF are aggressively testing (trading at or through the technical level with very little pullback). If GBP/USD and USD/CHF break through their technical levels, EUR/USD is more likely to follow suit. Similarly, if GBP/USD and USD/CHF do not test the important technical level aggressively, EUR/USD is expected to keep its equivalent technical level.

The lead times for GBP/USD and USD/CHF might range from a few seconds or minutes to several hours or even days. Just make sure you're looking at technical levels that are comparable in each pair.

EUR/USD tactical trading considerations

We've gone over the primary trading characteristics of the EUR/USD, and now it's

time to see how those characteristics convert into real-world trading strategies. That is, after all, where the real money is made and lost.

Choosing between a move in the US dollar and a move in the euro

We said earlier in this chapter that the EUR/USD is frequently used by forex markets to reflect their views on the US dollar. Simultaneously, we stated that EUR/USD will respond to euro-centric news and data. As a result, traders entering EUR/USD on any given day should be aware of whether the driving force is dollar-based or euro-based. Are they optimistic on the EUR or pessimistic on the US dollar? Is it one of the two, or a combination of the two?

It's critical to understand which currency is driving EUR/USD at any given time so you can better adjust to fresh data and news. If a EUR-based move upward occurs, then later

in the day, surprisingly positive USD news or data is issued, guess what? We've got countertrend data hitting the market, which could lead to a EUR/USD reversal lower (in favor of the dollar). Similarly, if the US data is lower than expected, the EUR/USD is likely to rise higher, as EUR-buying enthusiasm has now been paired with USD-selling desire.

In the EUR/USD market, patience is a virtue.

We looked at why EUR/USD might spend hours trading in relatively narrow ranges or testing technical levels earlier in this chapter. In such markets, the idea is to maintain patience based on your directional outlook and technical analysis. Short-term support should be able to keep an upward test alive, while short-term resistance should keep a down-move going. If those levels are breached, the trend is likely to stall, if not reverse.

Using backing and filling to your advantage

Because the EUR/USD tends to retrace more of its short-term fluctuations, you may typically enter a position in the direction you want by placing a buy or sell order at somewhat better rates than current market prices allow.

Instead of reaching out and hitting the bid on a downtick, you can leave an offer slightly (approximately 5 to 10 pips) above the current market level and use it to get short if the EUR/USD price movement after 08:30 ET U.S. data shows EUR/USD moving lower.

If your order is filled, you'll get your desired position at a lower price than if you went to market, and you'll most likely be in a better rhythm with the market (having sold on an uptick). Alternatively, you can use the market to take advantage of routine backing and filling by selling on upticks and purchasing on downticks.

On technical levels, allowing for a margin of

inaccuracy

We like to utilize a 10- to 15-pip margin of error when judging whether EUR/USD has breached a technical level. (Short-term traders may want a lower margin of error.) Short-term traders and technical purists both enjoy identifying a specific price level as support or resistance. They'll call it a break if the market trades above or below their level, and that'll be the end of it. However, the spot forex market rarely trades with such a high regard for technical levels that such a distinction can be made. And, given the high level of interest in EUR/USD, it's especially vulnerable to smudged technical lines.

The main idea to take away from this is that technical levels generate a lot of interest, and it continues to circulate through the market long after the level has been breached. This is when our margin of safety comes into play. Again, this isn't a hard and fast rule, but EUR/USD will have chewed through the majority of market interest around a technical

level within 10 to 15 points beyond the level.

USD/JPY: East Meets West

The USD/JPY is one of the more difficult major currency pairings to trade, and it necessitates a higher level of discipline and patience. Whereas other currency pairs are known for their regular market changes and steady, active trading interest, the USD/JPY appears to have an on/off switch. It can stay in quite small ranges for hours or even days before embarking on a mission to a new price level.

Among the major pairings, USD/JPY can provide some of the clearest trading opportunities. When you're trading USD/JPY correctly, the profits can be astoundingly fast. You'll know when you're wrong in USD/JPY quite fast. Understanding what drives the pair and how price action reacts is critical to developing a successful trading game plan in USD/JPY.

USD/JPY fundamentals for trading

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Index are two different types of activity indexes.

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US Dollar/Japanese Yen Price Action

We mentioned earlier in this chapter that, in comparison to the other major currency pairs, USD/JPY appears to have an on/off switch. Add in the fact that USD/JPY liquidity can be erratic as well. Hundreds of millions of dollars in USD/JPY can be bought or sold without affecting the market; at other times, liquidity is scarce.

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=USD/JPY fundamentals for trading

After the US dollar and the European single currency, the euro, the Japanese yen is the third most important international currency. According to the 2013 BIS assessment of

foreign exchange markets, USD/JPY accounts for more than 20% of global trading activity. In terms of GDP, Japan is the third largest country after the United States and China, and the JPY is the third most important currency grouping after the USD and EUR.

Using the numbers to trade USD/JPY

The standard market practice is to quote USD/JPY in terms of JPY per USD. A USD/JPY rate of 115.35, for example, indicates that it takes

To buy $1, you'll need 115.35.

USD/JPY moves in the same direction as the USD's overall value, but in the opposite direction of the JPY's value. The USD/JPY rate will rise if the US dollar strengthens and the Japanese yen weakens. The USD/JPY rate will fall if the US dollar weakens and the

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The US dollar serves as the base currency, while the JPY serves as the secondary or counter currency. This entails

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In JPY, the pip value, or minimum price fluctuation, is expressed.

Profit and loss are calculated in Japanese yen. Each pip is worth 1000 for a standard lot position size, 100 for a mini lot position size, and 10 for a micro lot position size. Divide

the JPY sum by the USD/JPY rate to get the USD equivalent. Using the rate of 115.00, $1,000 equals $8.70 and $100 equals $0.87.

Margin calculations are usually done in US dollars. So, using the leverage rate to determine how much margin is necessary to hold a trade in USD/JPY, it's a simple calculation. To open a standard-size position of 100,000 USD/JPY at 100:1 leverage, $1,000 in available margin is required.

Interest rates in the United States have a big impact on the USD/JPY.

If we had to pinpoint the key driver of the USD/JPY, it would undoubtedly be interest rate changes in the United States. The fundamental cause for this is the Japanese government's and investors' huge holdings of US government debt. The Bank of Japan (BOJ) alone is in possession of about $900 billion in assets.

Treasury debt issued by the United States of America. If interest rates in the United States begin to fall, the price of government bonds in the United States rises, enhancing the USD worth of Japan's U.S. debt holdings. Japanese reserve currencies are used to balance, or hedge, their higher USD-long currency exposure.

Managers must sell more US dollars. As seen in Figure 8-2, which illustrates the USD/JPY rate and the yield on two-year US Treasury notes on a monthly basis over 10 years, USD/JPY closely tracks US Treasury yields.

Figure 8-2 shows a diagram of the process.

USD/JPY

exchange rate and two-year yields

Monthly payments of US Treasury notes during a ten-year period. Because of this, the USD/JPY closely tracks the path of US

Treasury yields.

Hedging operations for asset managers.

FOREX.com/Bloomberg/Bloomberg/Bloombe

Long-term traders can profit from interest rate cycles in the United States by purchasing USD/JPY when rates are expected to increase and selling after rates have peaked and are starting to fall.

Trade is politically controversial.

Among the main currency pairs, USD/JPY is the most politically sensitive. Japan's economy is strongly export-oriented, with exports accounting for more than 40% of total economic activity. This means that Japanese policymakers use the JPY as a critical policy tool to boost and control the Japanese economy, and they aren't afraid to intervene in the market to keep the JPY from strengthening beyond targeted levels.

A weak currency makes a country's exports cheaper for foreigners, creating a competitive advantage for gaining market share if all other factors are equal. A weak currency has the unintended consequence of making imports from other countries more expensive, placing foreign exporters at a disadvantage in the local market.

Trade partners have previously accused Japan of currency manipulation and attempted to compel the JPY to strengthen. However, with China's phenomenal rise over the last decade, lil' ol' Japan and the yen appear to have faded from view as the principal target of free-market proponents. However, this is due to China's enormous current and future potential rather than any shift in how the Japanese handle the JPY.

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Japanese asset managers are known for banding together.

The Japanese are the consummate savers, if the Americans are the ultimate shoppers. The

savings rate in Japan (the percentage of disposable income that is not spent) is roughly 15%. (Compare that to the United States' savings rate of roughly 5%!) As a result, Japanese financial institutions manage trillions of dollars in assets, the majority of which are invested outside of the country. Because fixed income securities account for the majority of assets, Japanese asset managers are constantly on the lookout for the highest paying investments.

Due to Japan's extremely low domestic returns, this subject has gained more significance in recent years. The Bank of Japan had yields close to 0% at the time of writing, and a huge QE program to maintain interest rates low for the long term. Because of the low returns, Japanese investors and asset managers choose to sell the yen and invest in higher-yielding currencies that are stronger than the yen. Domestic interest-rate rates in Japan are thus a significant long-term predictor of the JPY's value.

In terms of investment techniques, Japanese financial institutions are likewise known for taking a more collaborative approach. As a result, Japanese asset managers are more likely to pursue comparable investment strategies at the same time, resulting in massive asset flows reaching the market in a short period of time. This has significant consequences for the USD/JPY price behavior (see the next section).

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As investors pour in on the current directional move, the upshot of this concentration of Japanese corporate interest is a significant tendency for USD/JPY to reflect short-term trends (few hours to several days) in price fluctuations. The usage of standing market orders by Japanese asset managers exacerbates this trend.

If a Japanese pension fund manager wants to start a long position in the USD/JPY, he'll probably place orders at several fixed levels below the current market to try to buy dollars on dips. If the market is currently trading at 102.00, he may purchase a portion of the total position there, but place orders to purchase

the remainder amounts at staggered levels below, such as 101.75, 101.50, 101.25, and 101.00. If other investors share this viewpoint, they will also bid below market value.

If the market starts to rise, asset managers may get concerned that they won't be able to buy on weakness and boost their orders to greater levels, or buy at market prices. In any case, purchasing demand is rising in tandem with price action, implying a potentially faster price movement. Any countertrend move is soon reversed due to strong purchasing activity.

When everyone is on board, such price movements tend to come to an end – most of the purchasers who intended to buy are now long. There is no new purchasing coming into the market at this time, and the directional move begins to halt and go sideways. It's possible that the early buyers have reached their limit.

Profit-taking orders to sell above the market, while lagged purchasers continue to buy on dips. As a result, a consolidation range develops, which can be as wide as 1 or 2 pips or as narrow as 40 to 50 pips.

Short-term traders will typically find trading opportunities in such consolidation ranges, while medium- and long-term traders may wish to take a step back and wait for a new directional movement. The USD/JPY witnessed a protracted period of sideways movement in summer 2014, resulting in the lowest-ever degree of volatility (a measure of price movement variance across time). USD/JPY was a yawn to trade at the moment.

In the USD/JPY, technical levels are crucial.

So how can you know where the orders are if you're a normal trader or investor who doesn't work at a Japanese bank? Simply said, concentrate on the technical aspects.

No other currency pair is as reliant on technical support and resistance as the USD/JPY. This is due in great part to the frequency of minor orders, where the order level is determined by technical analysis. When it comes to technical trading levels, the USD/JPY exhibits a lot of other noteworthy characteristics:

With significantly fewer false breaks, the USD/JPY tends to respect technical levels. This is usually caused by the presence of significant order interest at the technical level. If trend-line analysis or daily price lows point to 101.20 as a major support level, large buying orders are likely to be placed there. Bank traders following the order may decide to buy ahead of it, preventing the level from being struck or tested. The level will hold if the selling interest is insufficient to fill the purchasing order. If the technical level is breached, on the other hand, it's a strong indication that selling interest is significantly greater and likely to continue.

On breakdowns of technical support and resistance, the price action of the USD/JPY is frequently very directional (one-way traffic). Price movements tend to be fast and one-sided when technical support or resistance is overcome, with limited pullbacks or backing and filling (prices coming back to test the breakout level). This is the outcome of high market demand overriding any standing orders and likely stop-loss orders over the technical level. For example, after breaking over 80.00 in September 2012, the USD/JPY went on to appreciate by more than 30% (while the yen lost value) during the next nine months.

Technical level spike reversals (sharp — 20- to 50-pip — price moves in the opposite direction of the last move) are rather prevalent. Spike reversals signal a substantial shift in market sentiment in the opposite direction, and they commonly mark notable highs and lows. They're also proof that the reversal's directional move was most likely false, implying higher potential in the

reversal's direction.

Intraday highs and lows, as well as reversal points, are usually defined by orders. Institutional orders in Japan are frequently left at round-number prices, such as 84.00, 84.25, 84.50, and so on. Always take note of tops/bottoms near round-number price levels while looking at JPY charts because there could be substantial orders there.

USD/JPY tactical trading considerations

We've already mentioned USD/inclination JPY's to be active in one direction or consolidate in the other — the on/off switch. As a result, we like to take a more strategic, hit-and-run approach to USD/JPY, entering when we believe a direction change is occurring and exiting when we don't. Breaks of trend lines, spike reversals, and candlestick patterns are our primary indicators of impending directional movement (see

Chapter 11).

On a tactical level, the USD/JPY is a cleaner trading market than most of the other majors, hence we like to use stricter trading rules when dealing with it. The idea is that if we're correct, we'll join in the fun. If we're mistaken, however, we get off at the next station.

Breakouts of trend lines and price levels are actively traded.

Breaks of trend lines and major price levels, such as daily or weekly highs/lows, are one of our trigger points for entering the USD/JPY market. Breaking important technical levels usually requires a large degree of market interest, as we mentioned before. Rather than regular back-and-forth price action, we look at the actual breaks as clear indication of significant interest.

Taking use of spike reversals

We're on the lookout for any sharp price reversals after USD/JPY has witnessed a pretty quick (typically within two to three hours) move of more over 70 to 80 pips in one direction. In USD/JPY, spike reversals of 30 to 40 pips occur frequently in extremely short time frames (5 to 20 minutes). We take them as a sign that the previous move has come to an end and it's time to leave. Spike reversals are short-term events, and employing a 30 to 40 point trailing stop-loss order if you can't be in front of your trading screen is one approach to hedge against them. Figure 8-3 illustrates how spike reversals can commonly signal key turning points.

EUR/JPY and other JPY crosses are being monitored.

Cross flows have a big impact on USD/JPY, and they often take a back seat on any given

day. We always keep a watch on the JPY crosses and their technical levels when reviewing USD/JPY. Because GBP/JPY is typically traded through dollar pairs, a breach of critical support in GBP/JPY, for example, might trigger a flood of short-term USD/JPY selling.

EUR/JPY is the most heavily traded JPY cross, and its intraday swings regularly drive USD/JPY. When major technical levels in the two pairs coincide, such as when both USD/JPY and EUR/JPY are testing a series of recent daily highs or lows, be on the lookout. A break by one can easily bleed over into the other, resulting in both purchasing and selling.

Graph 8-3:

Spike rever- sals (circled) on an hourly USD/JPY chart.

areas). 20-second challenge

a score of 30 Reversals can be a useful indicator that a trend has come to an end.

It's possible that the trend is reversing.

eSignal is the source of this information (www.esignal.com)

Sterling and the Australian dollar are the other major currencies.

GBP/USD (sometimes known as sterling or cable) and AUD/USD are the other two major currency pairs. Although the pound is considered a prominent currency pair, its trading volume and liquidity are far lower than those of EUR/USD or USD/JPY. In recent years, the Australian and New Zealand dollars have surpassed the Swissy (Swiss franc) and the Canadian dollar as the most actively traded currencies. The Australian, in particular, has risen to prominence, which is why it is included in this section.

GBP/USD GBP/USD GBP/USD GBP/USD GBP/USD GBP/USD G

Because the pair is prone to fast price changes and seemingly chaotic price action, trading in cable brings its own set of obstacles. But it's precisely this kind of pricing behavior that keeps speculators coming back – when you're correct, you'll know very fast, and the short-term rewards might be substantial.

GBP/USD basics for trading

According to 2013 GDP figures, the United Kingdom's economy is Europe's third largest behind Germany and France, and the pound is heavily influenced by cross-border trade and mergers and acquisitions (M&A) activity between the UK and continental Europe. The EUR/GBP cross is one of the most important trade-driven cross rates because it accounts for about two-thirds of UK international

commerce.

According to a 2013 BIS survey of foreign exchange turnover, GBP/USD contributed for 8% of global daily trading volume, making cable the third most active major pairing. However, you may not believe this once you begin trading cable, where liquidity appears to be scarce at all times. GBP/USD trading is rather inexpensive these days, with most brokers offering a spread of 1 pip or less.

Using the numbers to trade sterling

GBP/USD is expressed in terms of the amount of dollars required to purchase one pound, so a rate of 1.6015 means that one pound costs $1.6015. The GBP is the pair's major currency, while the USD is the pair's secondary currency. That is to say,

GBP/USD is a currency pair that is traded in

GBP. Standard lot sizes in online currency trading platforms are £100,000, whereas mini lot sizes are $1,000.

Micro lots are GBP 1,000, and large lots are GBP 10,000.

The pip value, often known as the minimum price fluctuation, is expressed in US dollars.

Profit and loss are calculated in US dollars. Each pip is worth $10 for a standard lot position size, $1 for a mini lot position size, and $0.10 for a micro lot position size.

In online trading platforms, margin calculations are usually done in US dollars. Because of its high relative worth to the US dollar, trading in GBP pairs necessitates the most per-lot margin. To trade a one-lot position for £100,000 at a GBP/USD rate of 1.9000, it will take

There is a $1,900 margin available (based on 100:1 leverage). Of course, the calculation will change over time as the GBP/USD exchange rate fluctuates. A higher GBP/USD rate necessitates more USD in margin collateral, whilst a lower GBP/USD rate necessitates less USD in margin.

Trading in the same way as EUR/USD, but with a lot more oomph!

Cable is comparable to the EUR/USD in that it trades in the opposite direction of the US dollar. However, although EUR/USD is frequently suffocated by excessive two-way liquidity, cable demonstrates far more rapid volatility and dramatic over-all price changes. If the US economy disappoints, for example, sterling and the EUR/USD will rise. However, if EUR/USD rallies 60 points in a single day, cable might surge 100 points or more.

This is due to a lack of liquidity as well as a general lack of market interest in cable. In terms of daily worldwide trading sessions, cable volume is at its highest during the U.K./European trading day, but it significantly decreases during the New York afternoon and Asian trading sessions. Cable might see considerable short-term price changes solely due to position-adjustments during certain off-peak times (for example, shorts getting squeezed out).

Another significant distinction between cable and the EUR/USD is their differing reactions to domestic economic and news events. Cable has a tendency to react more violently to unexpected U.K. news/data than EUR/USD.

Related news/data from the Eurozone If better-than-expected Eurozone data is released, for example, EUR/USD may simply politely accept the report and move marginally higher. However, if unexpectedly positive U.K. data is released, GBP/USD

might take off like a rocket.

Important data reports from the United Kingdom

Cable has a strong reaction to economic information from the United Kingdom, especially when the data is in the opposite direction of expectations or contradicts current monetary policy conjecture. For example, if the market expects the Bank of England (BOE) to raise interest rates next month, and a monthly inflation data shows a decline in price pressures, GBP/USD is likely to fall swiftly as interest rate bets are unwound.

The following are key UK statistics reports to keep an eye on:

BOE Monetary Policy Committed (MPC)

rate decisions, as well as speeches by MPC members and the BOE governor, and four-times-a-year BOE Inflation Reports

BOE MPC minutes BOE MPC minutes BOE MPC minutes BOE MPC minutes BO (released two weeks after each MPC meeting)

Inflation indicators such as the Consumer Price Index (CPI), the Producer Price Index (PPI), and the British Retailers Consortium (BRC) shop price index

The BRC retail sales monitor and retail sales

House price balance, according to the Royal Institution of Chartered Surveyors (RICS).

Production in the industrial and manufacturing sectors

Balance of trade

Consumer confidence survey in the United

Kingdom conducted by GfK (a private market research firm).

Trading the Australian Dollar is the new kid on the block.

According to the 2013 BIS Triennial survey on foreign exchange turnover, the Australian dollar has overtaken several of the other major currencies in recent years to become the fourth most often traded USD pair. A number of events precipitated this:

The Australian economy fared exceptionally well throughout the 2008 financial crisis, and was the only major economy to avoid going into recession.

The Australian dollar is frequently used as a proxy for China. Because it has such strong trade ties with China, its currency frequently reflects Chinese economic fundamentals.

AUD/USD fundamentals for trading

According to a 2013 BIS poll, the Australian dollar is the world's fourth most traded currency. Its fortunes are directly connected to the performance of the Chinese economy because it can be traded as a proxy for China. As a result, when trading the Australian dollar, you must be mindful of Chinese data releases.

Australia is also a large commodities producer, which has two effects on the country:

It is susceptible to fluctuations in commodity prices. When commodity prices fall, it reduces the value of Australian exports and has an impact on the economy, which is bad news for the Australian dollar. It's also true in the other direction.

To increase the attractiveness of their exports,

large exporters prefer a weaker currency. This means that the Australian dollar may be vulnerable to verbal intervention from the Reserve Bank of Australia (RBA), despite the fact that, unlike the Bank of Japan or the Swiss National Bank, the RBA rarely intervenes physically in the market.

Using the numbers to trade the Australian dollar

The AUD/USD rate is expressed in terms of the amount of dollars required to purchase one Australian dollar, therefore a rate of 0.9550 means that one Australian dollar costs $0.9550. The primary currency in the pair is the Australian dollar, while the secondary currency is the US dollar. That is to say,

AUD/USD is a currency pair that is traded in Australian dollars. Standard lot sizes in online currency trading platforms are AU$100,000, mini lot sizes are AU$10,000,

and micro lots are AU$1,000.

The pip value, often known as the minimum price fluctuation, is expressed in US dollars.

Profit and loss are calculated in US dollars. Each pip is worth $10 for a standard lot position size, $1 for a mini lot position size, and $0.10 for a micro lot position size.

In internet trading platforms, margin calculations are usually done in US dollars. To trade a one-lot position for $100,000 at a AUD/USD rate of 0.9000,

It will take $900 in available margin to make £100,000 in profit (based on 100:1 leverage). Of course, the calculation will change over time as the AUD/USD exchange rate fluctuates. A higher AUD/USD rate will necessitate more USD in margin collateral, whereas a lower AUD/USD rate will necessitate less.

Important data reports from Australia

The Australian dollar is susceptible to interest rate fluctuations. Interest rates in Australia are generally higher than in other countries. In the aftermath of the financial crisis, the RBA, for example, did not engage in quantitative easing or negative interest rates. As a result, it's appealing as a carry trade (see Chapter 12). Interest rate changes and comments from the RBA's governor can cause volatility in the Australian dollar.

The following are important Australian statistics reports to keep an eye on:

RBA rate decisions, as well as RBA members' and, in particular, the RBA governor's speeches

Minutes of the RBA MPC (released two weeks after each RBA meeting)

CPI and PPI are two examples of inflation indicators.

Sales in the retail sector

The cost of housing

Production in the industrial and manufacturing sectors

Balance of trade

Data on employment

Chinese data, such as manufacturing PMI survey results, trade statistics, and interest rate changes

Getting to Know Forex Positioning Data

Because forex is not traded on a stock exchange, how can you tell which currencies individuals are buying and selling? There's no need to be concerned; there are numerous sources of forex positioning data. Because the forex market is so large, the best you can expect for is a snapshot of trading activity in

a certain market area. The Commodities Futures Trading Commission (CFTC), for example, publishes data every week (at 3:30 p.m. Eastern time on Friday) that shows the net noncommercial (speculative) futures positions for the major currencies versus the US dollar. On a weekly basis, this tells you if the market is long (buying a currency) or short (selling a currency).

This information is useful since it can be regarded as an indicator of current forex trading activity.

How should the data be interpreted?

The information displays the number of open positions in various currency pairs. They can be positive (people are buying the dollar pair) or negative (people are selling the dollar pair) (people are selling the dollar pair). When a currency is heading higher against the US dollar, CFTC positioning data often follows suit. This information can be used to confirm a trend's strength. GBP/USD, for example, is

likely to be in an uptrend if a substantial portion of the forex market – the futures community — is buying the pound. It can, however, be used as a contrarian indicator: Some traders may interpret a market buy signal as a sell signal if the market has been purchasing sterling for some time. Because trends do not last indefinitely, the contrarian trader may profit.

check at CFTC data to determine if the market in one currency pair (say, GBP/USD) is overly stretched to the upside, and if he believes it is, he may choose to go short on GBP/USD.

Although positioning data can be informative, we do not recommend trading just on CFTC positioning data because it is a trailing indicator that does not reflect news events or economic data that may effect a currency pair on a more frequent basis.

Fixing the FX

You're likely to hear the term "FX fix" whether reading about foreign exchange in the business press or in a forex dealing room. So, what exactly is it? The FX fix is a 60-second timeframe during which significant exchange rates are determined. Because there is no central exchange that regulates the forex market, the fix is used to establish benchmark forex rates.

The most popular fix times in London are between 4 p.m. and 8 p.m. The 4 p.m. London FX fix is a popular benchmark, owing to the fact that it was the first introduced by the WM Company (which is now a joint venture with Thomson Reuters). These rates are primarily utilized by the financial community, which utilizes them to compare their portfolios to benchmarks and other portfolios without regard for exchange rate fluctuations.

Point-in-time (PIT) trading is when you trade at a specific time. This entails purchasing and selling currencies at specific periods throughout the day. Trading any of the major FX pairings during fixing times, on the other hand, should be avoided by retail traders because it can produce a spike in volatility. This trading method entails trading during periods when currency markets are shifting from one worldwide region to the next. Liquidity may begin to wane around this time, causing volatility to rise.

At the time of writing, global market regulators are looking into the FX fix due to concerns that it could be manipulated. Because the research is ongoing, additional revisions to the fix, such as raising the 60-second timeframe, are possible, but nothing has been confirmed so yet.

Regulation and forex

Despite being the world's largest market, the FX industry has mainly remained unregulated. This means that dealers can determine their own prices without the involvement of a government agency.

Because there are no formal laws or regulations in place in the currency market, trust is crucial. The forex market functions because both parties to a transaction have faith in one another. However, there has been a movement for more formal regulation in the aftermath of the 2008 financial crisis. Changes are in the works to make the FX fix less susceptible to manipulation, as we mentioned earlier.

We anticipate significant changes in the FX regulatory landscape in the future years. More computerized trading and new norms of behavior are being pushed. Despite the fact that retail traders almost always trade on an electronic platform, norms of conduct may have an impact on the way you trade.

We at FOREX.com feel that any effort to increase market transparency is beneficial to both the market and the ordinary trader.

Before you start trading with a broker, make sure it is regulated.

CROSS-CURRENCY TRADING AND MINOR CURRENCY PAIRS

Extending your horizons beyond the majors

Getting to know the minor dollar pairs as well as the Scandinavian currencies

Identifying cross-currency trading possibilities

Understanding the impact of cross-currency trade on the market as a whole

The major currency pairs account for the majority of global currency market turnover, although there are also speculative trading options.

The four major dollar pairs aren't the only ones to consider (currency pairs that include the USD). To begin with, three more currency pairs, known as minor or tiny dollar pairs, complete the primary trading pairs that involve the US dollar. More trading alternatives are available in the Scandies, which are the currencies of Scandinavian countries that have not joined the Euro. Then there are cross-currency pairs, or crosses for short, which pit two currencies other than the US dollar against one another.

We examine minor currency pairs, Scandinavian currencies, and cross-currency pairs in this chapter to understand how they

fit into the general market and provide extra speculative trading opportunities. Despite the fact that the USD

When the dollar isn't the center of attention in the currency market, you'll want to know where the chances are.

Minor Currency Pairs Trading

The minor dollar pairs are USD/CAD (the US dollar versus the Canadian currency) and NZD/USD (the New Zealand dollar versus the US dollar) (the New Zealand dollar versus the U.S. dollar). The AUD/USD (Australian dollar/US dollar) was once a minor currency, but trade volumes in the AUD have increased dramatically in recent years, hence it is included in Chapter 8. The Swissie should technically replace the AUD, but because it falls somewhere between the majors and minors, we haven't put it here. It's worth mentioning that minor currency pairings are also known as commodity

currencies; Australia is still a significant commodity producer, thus the Aussie is still a commodity currency.

Commodity currencies (not only)

We don't want you to get the notion that the trading behavior of so-called commodity currencies is solely determined by commodity price movements. To be true, price swings in those pairs have been highly associated with movements in underlying commodities such as gold, silver, and oil in recent years. However, correlation does not imply causality. That instance, simply because two assets move together in a statistically significant relationship does not mean that the movement of one causes movement in the other.

More commonly, they may be reacting to comparable bigger underlying factors, such as the strength of global demand as evidenced

by Chinese growth data. China is a huge raw material consumer, and Australia is a major exporter of metals, coal, and grains. Prices for such commodities may rise as a result of market perceptions of strong demand. Gains in commodity prices may help Australian mining and agricultural companies make more money, luring international investors who require AUD to buy Australian stocks. It would not be surprising if the AUD rose in tandem with commodity prices in this scenario.

However, there are a number of instances in which such linkages could break down, especially in the near term, and prices diverge. Continuing with the China/Australia relationship, robust growth and commodity demand may lead the Reserve Bank of Australia (RBA), Australia's central bank, to imply that interest rates may need to be lifted, confirming the positive correlation and supporting the AUD. However, if the RBA delays hiking rates due to unforeseen occurrences, such as the major floods in early

2011, currency market expectations may be disappointed, and the AUD may drop, even if commodities prices continue to rise despite production disruptions. We hope you get the idea that currency and commodity connections are not set in stone.

The following tables, based on weekly statistics and percentage changes, demonstrate the historical correlations (correlation coefficients) between these currencies and individual commodities over a two-year and ten-year period ending in February 2011, respectively. A correlation coefficient is a statistical measure of how closely the values of two securities fluctuate when they are compared. Coefficients might be anything between 0 and 1.

+1.00 to 1.00, with a correlation of +1.00 indicating that the two assets are perfectly favorably connected (meaning, a 1 percent gain in one would see a 1 percent gain in the other). The two are perfectly negatively connected if the coefficient is 1.00. (meaning,

a rise of 1 percent in the first would see a decline of 1 percent in the second). A coefficient of 0 indicates that there is no statistically detectable link between the two variables, and they are referred to as non-correlated. A correlation of +0.7/0.7 or greater is considered a fairly strong association as a rough benchmark. However, keep in mind that relationships exist throughout time. What is highly connected today may not be so highly correlated tomorrow, or perhaps next month. Such correlations may be more valuable to medium- and long-term traders than to short-term, intraday traders, since specific market news is more likely to trigger a breakdown in the observed link.

Quarterly correlations between commodity currencies and commodities are seen in the graph below

The term "commodity currencies" refers to the importance of the oil, metals, agricultural, and mining industries in Canada, Australia,

and New Zealand's economy. Important caveats concerning the commodity relationship can be found in the surrounding sidebar "The (not simply) commodity currencies." According to the 2013 Bank for International Settlements (BIS) assessment of forex market volumes, the AUD/USD and USD/CAD represent for 7% and 4% of global daily trading activity, respectively. The NZD/USD pair accounts for less than 2% of total spot trading volume. However, these three pairs have more than enough liquidity to be actively traded and can provide significant trading possibilities for both short- and medium-term traders and speculators.

USD/CAD fundamentals for trading

The Canadian dollar (nicknamed the Loonie after the local bird seen on dollar coins) follows the same macroeconomic principles as the rest of the world's main currencies. That means you'll need to keep a careful eye on the Bank of Canada's (BOC) monetary policy, current economic statistics, inflation

readings, and political developments, just as you would any other nation.

When looking at USD/CAD, it's important to remember that the Canadian economy's trajectory is directly related to the overall direction of the US economy. The United States and Canada continue to be each other's main commercial trading partners, with the vast majority of Canadians living within 100 miles of the US/Canadian border. Even the BOC makes reference to it on a daily basis.

In its own economic outlooks, the United States of America. As a result, we don't believe it's an exaggeration to claim that the economic of the United States affects the economy of Canada. However, because this is a long-term trend, there are lots of short-term trading possibilities, particularly when the US and Canadian outlooks vary.

The sharp rise in commodity demand from China and other rapidly developing

economies has increased the sensitivity of CAD to overall commodity price developments in recent years, though as China's growth slowed in 2013–2014 and commodity prices appeared to have peaked, the relationship between CAD and commodities has weakened. However, when assessing the Canadian perspective, it's still important to consider the global economic picture.

When it comes to U.S. and Canadian economic data, geography plays a role because both countries release economic data reports around the same time each morning or only a few hours apart. At one extreme, a bad USD report combined with solid Canadian data can result in a dramatic decline in the USD/CAD rate (selling USD and buying CAD). On the other hand, a quick surge in the USD/CAD might be triggered by solid US data and weak Canadian data. A stalemate can be seen in mixed readings, but it always depends on the overall picture.

Using the numbers to trade USD/CAD

The typical market practice is to quote USD/CAD in terms of Canadian dollars per dollar. For example, a USD/CAD rate of 1.0200 means

To buy one US dollar, you'll need CAD 1.02. According to market convention, USD/CAD trades in the same general direction as the US dollar, with a higher rate indicating a stronger USD/weaker CAD and a lower rate indicating a weaker USD/stronger CAD.

The USD is the major currency, and the CAD is the counter currency in the USD/CAD pair. This entails

USD/CAD is a currency pair that is traded in US dollars. Standard lot sizes for online currency trading platforms are $100,000, and mini lot sizes are $10,000.

The pip value, or minimal price fluctuation, is expressed in Canadian dollars (CAD).

In CAD, profit and loss registers are kept. Each pip in a standard lot position is worth CAD ten, whereas each pip in a tiny lot position is worth CAD one. Using a USD/CAD rate of 1.0200 (which will, of course, fluctuate over time), each standard lot has a pip value of USD 9.80 and each standard lot has a pip value of USD 9.80.

Each tiny lot costs $0.98.

Because most margin calculations are done in US dollars, utilizing the leverage ratio to figure out how much margin is needed to retain a position in USD/CAD is an easy computation. For example, if you use 50:1 leverage, you'll need $2,000 in available margin to trade $100,000 USD/CAD and $200 to trade 10,000 USD/CAD.

The USD/CAD is unique among currency pairings in that it trades for spot settlement only one day after the trade date, whereas all other currency pairs trade for two days. The discrepancy is attributable to the fact that the financial centers of both countries, New York and Toronto, are in the same time zone, allowing for faster trade confirmations and settlement transfers. For spot traders, the distinction means that after the close of trading on Thursdays, instead of Wednesdays as with all other pairs, USD/CAD goes through the prolonged week-end (three-day) rollover. However, if you trade spot FX in the near term or with your FX broker, you are unlikely to notice these settlement date specifics (though knowing what's going on is helpful).

Keep an eye on Canadian events and statistics reports.

You'll need to pay close attention to specific Canadian economic data and official remarks

in addition to watching U.S. economic data to keep an eye on the broader economy to the south. When data or events arrive that are not in accordance with expectations, CAD can react violently. Keep a watch on the following Canadian economic events and news in particular:

Speakers from the Bank of Canada, rate decisions, and economic forecasts

Employment statistics

Gross domestic product (GDP) figures are released on a monthly basis.

Investing in international securities

International commerce of goods

Retail and wholesale sales

The consumer price index (CPI) and the BOC

CPI are two different types of price indexes.

Shipments of manufactured goods

Purchasing Managers Index (Ivey)

NZD/USD basics for trading

The Kiwi, like most things in New Zealand, is named for the local bird of the same name; the term Kiwi applies to both the NZD and the NZD/USD pair. (What is it with birds and nick-names for currency?) New Zealand's economy is one of the smallest in the world, hence the Kiwi is one of the most interest-rate sensitive currencies.

Over the last two decades, New Zealand's economy has undergone a significant transformation, shifting from a mostly agricultural export focus to a domestically driven service and manufacturing base. Disposable incomes have soared as a result of the rapid expansion, and with increasing

disposable incomes has come generally high inflation. As a result, New Zealand's central bank, the Reserve Bank of New Zealand (RBNZ), has regularly been among the most hawkish.

Although the Kiwi is classified as a commodity money, there is a crucial difference to be made. In contrast to Canada and Australia, which produce metals and energy commodities, New Zealand is predominantly an agricultural-commodity-producing economy (dairy products and meat in particular). As a result, the Kiwi has a weaker link with gold, silver, and oil prices than the CAD and AUD, as shown in the two tables in the previous sidebar.

A strong trade and regional relationship binds Kiwi trading to Australian data and prospects, in addition to all the regular New Zealand economic data and official announcements you'll need to keep an eye on.

There is no set formula for describing the currencies' relationship, but a general rule is that when the move is based on the US dollar, the Aussie and Kiwi will tend to trade in the same direction relative to the US dollar. When news from New Zealand or Australia arrives, the AUD/NZD (Aussie/Kiwi) cross will have a greater impact. For example, if Australian data disappoints, the AUD/USD would likely fall, dragging the NZD/USD down with it. However, Aussie/Kiwi cross selling (selling AUD/USD on bad data and buying NZD/USD for the cross trade) will usually mitigate NZD/USD losses relative to AUD/USD losses. When New Zealand statistics or news is the catalyst, a similar response will occur.

Events and data reports from New Zealand to keep an eye on

Given the importance of interest rates on the currency, RBNZ commentary and rate decisions are critical to the value of the Kiwi. The views of the finance ministry are

secondary to the independent RBNZ's rhetoric, yet they can nonetheless upset the Kiwi cart from time to time. Keep an eye on the following as well:

Consumer prices, house prices, and food costs are all on the rise.

Electronic-card spending and retail sales (debit and credit)

Consumer confidence indexes from Westpac and ANZ

Gross domestic product (GDP) and monthly trade balance

Business confidence survey by the National Bank of New Zealand (NBNZ)

By the numbers, you may trade the Australian and New Zealand dollars.

You can learn more about the Australian dollar in Chapter 8, but it's good looking at the data for both the AUD and the NZD together because they're both quoted in the same way. The number of USD per AUD or NZD is reflected in the AUD/USD and NZD/USD rates. A NZD/USD rate of 0.7000, for example, means that buying NZD 1 costs USD 0.70 (or 70). The Aussie and Kiwi trade in the opposite direction of the USD's total value, so a weaker USD means a higher Aussie or Kiwi rate, and a stronger USD means a lower Aussie or Kiwi rate.

The principal currencies in the pairs are the Australian dollar and the New Zealand dollar, with the US dollar serving as the counter currency.

The AUD/USD and NZD/USD currencies are traded in AUD or NZD position sizes.

The pip values are expressed in US dollars.

Profit and loss are calculated in US dollars. Each pip is worth USD 10 on a 100,000 NZD/USD trade; each pip is worth USD 1 on a 10,000 Aussie position.

On margin trading platforms, margin computations are usually made in US dollars.

A 100,000 Kiwi position requires USD 1,400 in margin at a 0.7000 NZD/USD rate and a leverage ratio of 50:1, while a 10,000 NZD/USD trade requires only USD 140 in margin.

Considerations for USD/CAD, AUD/USD, and NZD/USD tactical trading

We've grouped these three currency pairings together since they share many of the same trading characteristics and even travel in groups at times - particularly the Aussie and Kiwi, given their close economic ties and regional closeness. They can sometimes

function as a leading signal of overall USD market direction, whether they're grouped as commodities currencies or just minor regional currencies versus the US dollar.

Liquidity and market interest are at an all-time low.

The lower relative liquidity of these pairs accentuates the speculative effect on them, which is one of the reasons they tend to exhibit leading characteristics. If opinion shifts in favor of the US dollar, for example, the influence of speculative interest — or "quick money" — will be most visible in lower-volume currency pairs.

When a hedge fund or other significant speculator reverses a directional bet on the US dollar (for example, from short to long), it will begin buying US dollars all over again (meaning against most all other currencies). In the high-volume, liquid EUR/USD market, a half-billion EUR/USD selling order (650 million USD equivalent at 1.3000 EUR/USD)

is pretty readily absorbed and may only influence the market a few points (say, 10 to 20 pips, depending on the conditions). However, depending on the time of day and overall environment, a proportionately smaller order to sell Aussie, sell Kiwi, or buy USD/CAD (large speculators will typically allocate smaller position sizes to less-liquid currency pairs), amounting to only 100 million or 200 million in notional terms, could generate a 20- to 40-pip movement in these currency pairs.

In general, you should be aware that overall liquidity and market interest in these pairs are substantially lower than in the majors, despite the fact that the Aussie has just caught up with the majors and has surpassed the CHF as the fifth most traded currency.

The most widely traded currency on the planet. On a daily basis, when the local centers (Toronto, Sydney, and Wellington) are open, liquidity in these pairings is at its peak.

The London market makers provide a strong liquidity base to bridge the gap outside of local markets, but the USD/CAD market is largely ignored during the Asia/Pacific session, and the Australian and New Zealand markets are problematic after the London/European session closes until their financial centers reopen a few hours later. As a result, market interest in these currency pairings is concentrated among the big banks of the currency countries, which has its own ramifications (see the section "Technical levels might be unclear" later in this chapter).

The price activity is heavily influenced by events.

Because of the overall lower level of liquidity in certain currency pairings, combined with relatively high levels of speculative positioning (at times), you've got the perfect storm for dramatic movements following the release of currency-specific news or data. A dovish comment from a previously hawkish

Governor of the Bank of Canada can cause a significant shift in opinion against the CAD. If market expectations for a NZD interest-rate hike are high, and a significant inflation report contradicts that forecast (lower than expected), we've got a small market, perhaps overly positioned in one direction (long NZD/USD), that's all selling at the same time.

In these currency pairs, the bottom line is that substantial data or news surprises, especially when they are contrary to expectations and expected market positioning, have a disproportionately large influence on the market. Traders who are positioned in these currencies should be especially aware of this, as well as the increased volatility and risk they will face if events do not unfold as predicted. It's one thing if Eurozone CPI is higher than predicted, but it's quite another if Australian CPI is higher than expected.

When news of a data or event surprise is initially announced, it usually results in a price gap. If the news is sufficiently contrary

to market expectations and positioning, following price activity is largely one-way, as the market reacts to the unexpected news and exits prior holdings. If you're caught on the wrong side of these pairs after unexpected news, you're probably better off exiting now rather than waiting for a correction to exit at a better level. Because of the decreased liquidity and interest in certain currency pairs, you're probably not the only one who's been caught off guard. These currency pairs tend to have constant, one-way interest, punctuated by accelerations when new stop-loss order levels are hit.

Every aspect of politics (as well as economic statistics) is local.

Although most of our discussion of market drivers focuses on economic statistics and monetary policy, internal political happenings in these smaller-currency countries can cause large fluctuations in local currencies. National elections, political scandals, and

rapid policy shifts can all cause fluctuations in the local currency's value. The effect is more pronounced when the currency's value is on the decline (i.e., bad news hurts a currency more than good news — if there is any in politics — helps it). Of course, each case is unique, but the spillover impact between politics and currencies is strongest in these pairs, so if you're trading them, you should be conscious of domestic political happenings.

In terms of economic statistics, these currency pairs tend to follow the U.S. dollar in overall directional moves unless a local news or data event sparks more focused interest in the local currency. For example, if the US dollar is under pressure across the board, USD/CAD is likely to fall in lockstep with other dollar pairs. However, if unfavorable Canadian news or data surfaces, USD/CAD is likely to pare its losses and, if the news is bad enough, may even begin to move higher. If the Canadian news is CAD-

positive (for example, a higher CPI data implying a rate hike), USD/CAD will likely accelerate to the downside, since USD selling pressure is now exacerbated by CAD purchasing enthusiasm.

Technical levels are sometimes hazy.

Because of the lesser liquidity and market interest in some currency pairs, technical trading can be challenging at times. Trend lines and retracement levels, in particular, are prone to overshoots on a regular basis. Prices may go beyond the technical level — sometimes just a few pips, other times over significant distances or for extended periods of time — only to reverse course and restore the technical level later.

The primary explanation for this tendency to overshoot technical levels is because market demand for these pairs is concentrated in fewer market-makers — mainly the currency country's local banks. As a result, market

interest is concentrated in fewer hands, which might lead to order levels being triggered when they should not be. It's not a big concern if you're an interbank market-maker observing a stop-loss order for 5 million AUD/USD, because 5 million Aussie is easily transacted. However, if you have a stop loss of 50 million or 100 million AUD/USD, you'll need to be quick (and, more than likely, proactive) in order to complete the order at a fair execution rate.

It's a good sign when a price break of a technical level is rapidly restored if it's only a position-related action. However, if new information is available, you may be witnessing the first wave of a greater directional shift.

It's worth noting, though, that things are changing as commodity currencies (particularly the AUD and CAD) earn a larger percentage of the FX market volume.

SEK, NOK, and DKK are the Scandi currencies to trade.

Sweden, Norway, and Denmark were among the Scandinavian, or Nordic, countries that declined to join the monetary union that led to the euro. The Scandies' trading volumes are generally low, but they are sufficient to provide additional speculative trading opportunities depending on the circumstances. The majority of trade in the Scandies is done against the EUR, which is fueled by intra-European divergences in growth or interest rate outlooks. In general, trading the USD against the Scandies resembles trading the EUR/USD, but in reverse order due to quotation conventions.

"Stocky" is the Swedish krona.

The Swedish krona is known as Stocky after the country's capital, Stockholm, and its currency code is SEK. According to the 2013 BIS study of forex markets, trading volumes

in USD/SEK (dollar/Stocky) and EUR/SEK (euro/Stocky) accounted for 2% and 1% of daily global activity, respectively. Trading volume in the SEK fell marginally in 2013 compared to 2010, maybe due to the growing popularity of trading emerging market currencies and other majors like the Australian dollar. The Swedish central bank, known as Sveriges Riksbank in Swedish, is self-contained and plays a vital role in interest rate setting and currency stability.

Pay particular attention to the governor's and other Riksbank officials' comments in addition to the economic statistics coming out of Sweden. CPI statistics are also important inputs to the forecast for interest rates and the SEK because the Riksbank has an inflation target, or a desirable level of inflation.

The Swedish central bank has a history of speaking out about the value of the krona, particularly when it is too strong or weak in relation to the euro, which is the currency

with which most Swedish trade is conducted. When the Riksbank and the ECB appear to be on opposing interest rate courses, EUR/SEK can become particularly volatile.

Technically, Sweden is obligated to adopt the euro at some point after joining the European Union in 1995, but it has virtually opted out and shows no signs of doing so.

"Nokkie" is the Norwegian krone.

After its currency code, the Norwegian krone (NOK) is dubbed Nokkie, a play on the words "stocky." Because the USD/NOK and EUR/NOK trading volumes were not split out in the 2013 BIS survey, they are most likely less than 1% of daily worldwide trading activity volume.

Nonetheless, liquidity in NOK remains abundant, particularly during European trading hours. Norges Bank, Norway's central

bank, is self-contained and follows a traditional policy of price stability. Keep an eye out for instructions from the governor and other central bank officials, as Norges Bank policy often differs from that of the European Central Bank.

Norway is extremely affluent due to its vast energy assets, mostly North Sea oil, which have resulted in a sizable sovereign wealth fund, allowing it to play a significant role in global asset management. More crucially for day-to-day trading, Norway is the tenth largest oil producer in the world, and the NOK tends to trade as a basket of currencies.

Similar to the Canadian dollar, the petro-currency strengthens as oil prices rise and vice versa. Because Norway is not a member of the European Union, it seems doubtful that it will ever adopt the euro.

"Copey" is the Danish krone.

The Danish krone (DKK) is sometimes known as Copey, after the Danish city of Copenhagen. Rather than pursue currency independence like Sweden and Norway, Denmark chose to form a cooperative exchange rate agreement with Eurozone nations, and the Danish krone is pegged to the euro at a fixed exchange rate of 7.46038 +/2.25 percent. The Danish central bank (Danmarks Nationalbank) effectively sets interest rates in accordance with ECB decisions under this structure. As a result, the USD/DKK pair trades in the opposite direction of the EUR/USD pair, and the EUR/DKK pair trades in a very tight band around the fixed rate, often around 0.25 percent. As a result, there is less need to trade DKK because EUR/USD has better liquidity and EUR/DKK does not change. The Danish government has backed away from organizing a vote on Euro membership in the wake of the Eurozone sovereign debt crisis. The government, on the other hand, is content to maintain the EUR/DKK peg for the time being.

Pairs of Cross-Currency

Any currency pair that does not include the US dollar as one of the currencies is known as a cross-currency pair (or cross for short). (A list of all the distinct cross pairs can be found in Chapter 4.) However, cross rates are calculated using the prices of the underlying USD pairs. One of the most active crosses, for example, is EUR/JPY, which pits the world's two largest currencies against each other.

Directly against each other is the US dollar. However, the EUR/JPY rate is a function (the product) of the current EUR/USD and USD/JPY rates at any given time.

The most popular cross pairs are EUR/JPY and EUR/GBP, which are among the most commonly traded major currencies. (EUR/CHF would have been included in the mix in the past, but with the 2011 peg, EUR/CHF has become less appealing to trade.) Direct cross trading represented for a

tiny percentage of global daily volume — under 7% for the major crosses combined — according to the 2013 BIS survey of foreign-exchange market activity, and this figure has declined since the 2010 study.

However, because major interbank cross trades are typically done through the USD pairs rather than directly in the cross markets, that figure dramatically understates the amount of interest that is actually flowing through the crosses. For example, if a Japanese firm needs to buy half a billion EUR/JPY (half a yard in market parlance), the interbank traders executing the order will buy EUR/USD and USD/JPY alternatively to fulfil the order. Going straight through the EUR/JPY market will most certainly alert too many people in the market, causing the rate to move away from them. (In the "Stretching the Legs" section later in this chapter, we examine at how huge cross flows can move the dollar pairs.)

Individual traders dealing online, on the other

hand, will find that the direct cross pairs provide higher liquidity and narrower spreads than trading through the dollar pairs. Furthermore, because most online platforms do not net out holdings based on overall dollar exposure, entering a trade through the dollar pairings would require about twice as much margin as entering a position through the direct cross market. Individual internet traders may now trade relatively obscure crosses like NZD/JPY and GBP/CHF thanks to developments in electronic trading technology.

WHAT'S THE POINT OF TRADING CROSSES

Beyond the core USD pairs, cross pairs represent totally new sets of regularly fluctuating currency pairs that offer a new universe of trading options. Currency market developments aren't always a simple bet on what's going on with the US dollar. The second part of the narrative is crosses, which have grown in importance as a result of electronic trading. Years ago, if you needed a price for a cross pair, you had to use a calculator and push buttons to get a cross quote. Cross rates are as fluid as dollar

pairings thanks to today's streaming price technology, making them as accessible and tradable as USD/JPY or EUR/USD.

Cross trading, in particular, has the following benefits:

Trade opportunities might be identified based on news or fundamental movements. You may choose to sell GBP if the UK's outlook and data are steadily deteriorating. But against what, exactly? Buying USD and selling GBP may not produce any results if the USD is also weakening. Selling GBP against a currency with stronger short-term prospects (such as GBP/CAD or GBP/NOK) could result in a higher return.

Interest rate differentials can be used to your benefit. A carry trade is when you sell low-yielding currencies for higher-yielding currencies (see Chapter 10). Carry trades seek to profit from interest rate differentials as well as spot price appreciation, and they can be the foundation of major movements.

Technical trading possibilities can be taken advantage of. Although the majors may be range-bound or lack actionable technical indications, a cross rate could be extremely volatile and give a nice price breakout. Examine cross-rate charts for additional technical trading opportunities.

You have the ability to broaden your trading horizons. Instead of merely looking at four to seven dollar combinations, cross rates provide a dozen other currency pairs to consider for trading opportunities.

You have the option of going with the flow. Speculative flows are always present in the currency market, but they are not limited to dollar pairs. Today's speculative flow may be concentrated on JPY crosses or selling CAD across the board in response to unexpectedly bad CAD data. The better you are at identifying and profiting from cross-currency pairs, the more likely you are to identify and profit from the speculative move of the day.

Legs are stretched

Because institutional traders have a vested interest in keeping their operations hidden from the rest of the market, a large portion of interbank cross-trading volume does not pass via the direct cross market. In many circumstances, standing liquidity is simply unavailable in less liquid crosses (for example, GBP/JPY and NZD/JPY). To complete the trade, they must proceed via the legs, as dollar pairs are referred to in cross trading. They also want to maximize their profit margins by selling at the highest possible price and buying at the lowest possible price.

They can achieve this in a variety of ways, one of which is by alternating their trading in the dollar legs. For example, if you need to sell a substantial quantity of EUR/JPY, you can sell EUR/USD instead, which will tend to pull EUR/USD lower while pushing USD/JPY up (because U.S. dollars overall are

being bought). You should now be able to sell the USD/JPY leg of the order at a higher rate (hopefully). However, because U.S. dollars are now being sold, selling USD/JPY may push USD/JPY lower or cap its increase, causing EUR/USD to stop falling and recover higher. Now that the EUR/USD rate has improved marginally, you can continue to sell the EUR/USD leg of the order. You've (hopefully) executed the order at better rates than you could have directly in the cross by alternating the timing of which U.S. dollar leg you're selling, and you've likely managed to obscure your market activity in the more active dollar pairs by alternating the timing of which U.S. dollar leg you're selling.

Of course, things don't always go as smoothly as we've just explained. In the market, the net outcome is a steady directional move in the cross rate, while the USD pairs stay largely static or within recent ranges. Be on the lookout for such dollar-based activity, as it could indicate a cross-driven trend and a

trading opportunity.

In an otherwise dollar-based market reaction, cross-rate changes can have a significant impact on how individual dollar pairings move. Let's pretend some very USD-positive news or data has just been disclosed, and the market immediately begins buying USD. (In this case, we'll be purchasing USD/JPY and selling EUR/USD.) If the USD/JPY crosses a critical technical resistance level, it may accelerate higher, prompting the EUR/JPY to cross a similarly significant resistance level, attracting EUR/JPY buyers.

Because of the EUR/JPY cross buying, the EUR/USD will not fall as much or as quickly as the USD/JPY will rally in this circumstance. You might not be as happy if you went short EUR/USD on the bullish US news. However, because legs move in phases, prolonged EUR/USD selling might eventually break through support, sending EUR/JPY lower and capping USD/JPY.

As you can see, crosses can affect the market in a variety of ways, and there is no one-size-fits-all approach. Fortunately, with the advent of online trading, you no longer have to sort out cross trading as the guys did back in the day! However, it's still fascinating to learn how it was done and to observe market dynamics in action.

When the U.S. dollar is not the primary focus of the market's attention, or when big U.S. news (such as a nonfarm payrolls [NFP] report or a Federal Open Market Committee [FOMC] decision in a few days) is on the horizon, speculative interest often switches to the crosses. Always keep in mind that the market's interest may not be centered on the USD or any other single currency. It's a dollar market some days and a cross market other days. The pound may be losing across the board as a result of negative U.K. data, but if the USD is also down, the pound's decline will be most visible on the crosses.

You might be tempted to convert a cross-trade concept into a USD-based transaction when looking at cross-trade prospects. You might believe, for example, that the AUD/JPY is building a top. If you're correct, you might believe that one of two moves is likely — USD/JPY will fall or AUD/USD will fall — and you might be inclined to sell one of the legs (AUD/USD or USD/JPY) to avoid getting caught in a cross. However, there's another possibility: one leg may drop sharply while the other rises, causing the cross to fall as planned. However, if you cut the wrong leg short, you'll miss the boat.

When you see a trade opportunity in a cross, you should trade it. Don't try to outsmart the market by predicting which component will move in the opposite direction. Trust that the cross will move in the direction you forecast if your trade analysis is correct. Trading the crosses has never been easier than it is now, thanks to the introduction of electronic trading.

Trading JPY cross rates

The JPY crosses are one of the most common cross families, pitting the JPY against the other major currencies. The most popular JPY cross is EUR/JPY, but the popularity of the carry trade, which involves selling the low-yielding JPY and buying higher-yielding currencies, has resulted in considerable rises in AUD/JPY and NZD/JPY trading volume. The interest rate differentials between those currencies and the JPY are the widest.

The pip values of JPY crosses are denominated in JPY, hence profit and loss will be calculated in JPY. The margin need varies substantially depending on the major currency involved, with the highest margin required for GBP/JPY and the lowest margin required for NZD/JPY.

Risk mood (see Chapter 5) and overall volatility have the largest impact on JPY-cross fundamentals, but as we warned

previously, predicting which leg will cause the JPY crosses to move is a dangerous game. When trading JPY crosses, keep a watch on USD/JPY in particular, because of its somewhat volatile characteristics and crucial role as an outlet for overall carry trade buying and selling. Keep an eye out for technical levels that are comparable between the USD/JPY and the JPY crosses, as a break in one could lead to a break in the other.

Trading EUR cross rates

EUR cross movement is focused outside of EUR/JPY in EUR/GBP and EUR/CHF, where the cross direction is mostly controlled by changing out-looks between the Eurozone and the UK and Swiss economies.

Reactions to Eurozone and Swiss news or data will most likely be felt in EUR crosses rather than EUR/USD or USD/CHF, whereas UK news/data will erupt over GBP/USD and EUR/GBP. EUR/SEK and EUR/SEK/SEK/SEK/SEK/SEK

Another option to profit from differing economic or interest rate trajectories between continental Europe and Scandinavia is to trade EUR/NOK.

Sharp USD swings will also have an impact on these crosses, with the brunt of the USD move being felt in GBP/USD and USD/CHF, frequently biasing those legs to push their EUR cross in the short run. That means that a sharp move higher in the USD will often (but not always) lead to higher EUR/ CHF and EUR/GBP, whereas a fast move down in the USD will lead to lower EUR/ CHF and EUR/GBP.

These EUR crosses will have pip values denominated in either GBP or AUD. (EUR/CHF used to be a popular EUR cross, but volume has dropped since the Swiss National Bank imposed the peg in 2011.)

According to the 2013 BIS FX survey, 1% of daily trading volume, down from 1.8 percent

in 2010.) On a pip basis, typical daily ranges in the EUR crosses are minor — around 20 to 40 pips on average — but they're nevertheless significant in terms of pip value and roughly similar to daily EUR/USD variations.

CREATING A TRADING STRATEGY

eSignal is the source of this information (www.esignal.com)

In an article at www.dummies.com/extras/currency, you may take a quiz to see what kind of trader you are.

In this section...

Recognize the most frequent trading

strategies used in the forex market.

Learn how to figure out which trading technique is ideal for you.

Identify trade opportunities as soon as possible.

Develop trading discipline and maintain sanity in the world's most important market.

To improve your trading, overcome psychological obstacles.

BATTLE TRAINING AND PREPARATION

Choosing the right trading style for you

Identifying the various trading styles

Creating and maintaining market discipline is a difficult task.

Trading the strategy and planning your trades

It's necessary to take a step back and consider how you want to approach the forex market before you start actively trading it. There's a lot more to this than meets the eye, and we

believe it's one of the most crucial factors in overall trading performance.

You might think we're exaggerating a little with the allusion to training and war preparation in the title of this chapter, but we're not. Every battle is won or lost before it is ever fought, according to Chinese military philosopher Sun Tzu. When it comes to trading in financial markets in general, and FX markets in particular, we can't think of a better example.

In this chapter, we'll go over the most important things to think about when you try to figure out how you want to trade currencies. We go over the characteristics of several of the most often used trading styles and explain what they represent in practical terms. We'll also look at what trading discipline entails, as well as some of the psychological and emotional risks you're likely to face. Finally, and perhaps most importantly, we go over the fundamentals of creating and sticking to a trading strategy.

Choosing the Most Appropriate Trading Style for You

"What is the best way to trade the FX market?" we're frequently asked. To begin with, that is a loaded question that implies there is a right and wrong method to trade currencies. It also indicates that there's some sort of magical formula out there, and that if you can figure out what it is, you'll be able to trade with confidence. Unfortunately, there is no simple solution. To put it another way, there is no one-size-fits-all solution.

Every trading style (long-term, medium-term, or short-term) and technique can benefit from the forex market's trading features (technical, fundamental, or a blend). So, when it comes to determining which style or approach is best suited to currencies, the beginning point should not be the currency market itself, but rather your own unique circumstances and mindset.

Factors to consider in the real world and in one's lifestyle

You must first consider what resources you have available to help your trade before you can begin to develop a trading style and method that works best for you. When it comes to financial-market trading, like with many other endeavors, there are two key resources that people never seem to have enough of: time and money. Determining how much of each you can commit to forex trading will assist you in achieving your trading objectives.

If you work as a full-time trader, you have a lot of time to spend to market research and trading. However, because currencies trade 24 hours a day, you must be aware of which session you're trading as well as the daily peaks and troughs in activity and liquidity. (For details on trading sessions, see Chapter 2.) The fact that the market is constantly open does not imply that it is always a favorable time to trade.

If you have a full-time job, your boss might not appreciate you spending time away from

work to study charts or economic data reports. That implies you'll have to undertake your market research in your spare time. Keep in mind family obligations and other personal circumstances when estimating how much time you'll be able to devote on a regular basis.

When it comes to money, we can't emphasize enough that trading capital must be risk capital, and you should never risk money you can't afford to lose. Risk capital is money that, if lost, will not have a significant impact on your level of living. Borrowed money is obviously not risk capital, and you should never employ borrowed funds for speculative trading.

You'll have a better notion of what size account you can trade and what position size you can handle once you've determined how much risk money you have available for trading. Most online trading platforms provide significant leverage ratios, allowing you to control a larger position with a smaller

margin requirement. However, just because they have a lot of leverage doesn't mean you have to use it all of the time. (In Chapter 13, we go over the risk and return aspects of leverage in greater depth.)

Setting aside time for market research

We discuss the massive amount of data and news that goes through the forex market on a daily basis in earlier chapters, and how it may be absolutely overwhelming. This is one of the reasons why large forex trading institutions employ teams of economists, strategists, technical analysts, and traders. So, how can a single trader keep up with all of the data and news?

The objective is to establish a productive daily market analyzing practice. Independent traders may obtain a range of daily and intraday market updates, encompassing both technical and fundamental perspectives, thanks to the Internet and online currency

brokerages. Market analysis should be a part of your regular routine.

Overnight forex market developments: Who said what, what data was released, and how did the currency pairs respond.

Other notable market changes over the previous 24 hours, as well as the stories behind them, are updated daily: Find out why oil prices or US Treasury yields have risen or fallen significantly.

Expected data releases and market events for that day (for example, the retail sales report, Fed speeches, and central bank rate announcements): You should monitor data and event calendars one week ahead of time so you can predict outcomes along with the rest of the market.

Multiple-time-frame technical analysis of major currency pairs: Nothing beats a visual representation of price action for filling in the

gaps of how data and news impacted particular currency pairs.

Current events and geopolitical themes: Keep up with the major currency nations' important elections, political scandals, military wars, and policy initiatives.

It will take some time to establish a research regimen at first. Before you can figure out which sources provide the best overnight summaries, which fundamental analysts are most focused on the forex market, which technical analysts are most focused on actionable trading strategies, and whom to follow on Twitter, you'll have to read a lot of different news stories and analyst reports. The mainstream financial news sources, such as Bloomberg.com, Reuters.com, and MarketWatch.com, are where we spend most of our time.

Fundamental vs. technical analysis

In Chapters 7 and 11, we delve deeper into

fundamental analysis and technical analysis. We've included them here as things to think about when you construct your entire market strategy. Consider whether you'll make your trading decisions based on fundamental or technical analysis.

Each discipline's adherents have long contested which strategy is the most effective. Rather than picking sides, we recommend taking a hybrid strategy that incorporates both disciplines. Macroeconomic factors like interest rates, comparable growth rates, and market sentiment, in our experience, dictate the long-term direction of currency rates. However, currencies rarely move in a straight line, so there are plenty of opportunities to profit from short-term price swings and some of them can be quite significant.

Technical analysis can provide markers along the path of a larger price shift, helping traders to predict the direction and magnitude of

future price moves with greater accuracy. The most important thing to remember is that technical analysis is essential for developing a well-defined trading strategy. Your fundamental research, data expectations, or plain old gut instinct, for example, may cause you to believe that the EUR/USD is headed lower. But where do you run out of money? Where do you cut your losses and where do you collect profits? We like to utilize technical analysis to fine-tune trade entry and exit points, as well as to determine whether or not to add to or reduce positions.

Fundamental variables, such as current economic data or statements from a central bank official, appear to drive FX markets at times. Fundamentals act as catalysts for technical breakouts and reversals at certain periods. At other times, it appears that technical events are driving the action — a breach of trend-line support or recent daily lows may prompt market longs to sell stop-loss orders and bring in model systems that are selling based on the break of support.

Despite the fact that subsequent economic reports may contradict the directional breakout, the technical support is gone, and the market is selling.

Basic data and occurrences are merely a part of the jigsaw. Keep in mind that forex markets typically disregard individual news in favor of acting on a bigger theme or adjustment. As a result, we consistently emphasize that market reaction to data is more essential than the data itself.

When you approach the market with a mix of fundamental and technical analysis, you'll have a better chance of recognizing trading opportunities and managing your trades. You'll also be more equipped to deal with markets that react to both fundamental and technical developments, or a combination of the two.

Diverse Strokes for Diverse People

After you've considered how much time and money you have to commit to currency trading, as well as which technique you like (technical, fundamental, or a combination), the next step is to choose a trading style that best suits your preferences.

In FX, there are as many distinct trading techniques and market methods as there are people trading. However, the majority of them fall into one of three categories, which boil down to differing degrees of market risk exposure. Time and relative price changes are the two main components of market risk. The longer you maintain a stake, the greater the danger you face. The greater the price change you expect, the greater the danger you face.

We'll go over the main trading styles and what they mean for individual traders in the following sections. The purpose of this article is not to promote any particular trading strategy. (Styles overlap a lot, and you can use various ones for different trade opportunities or market conditions.) Instead,

our goal is to provide you an overview of the numerous ways utilized by forex market professionals so that you may grasp the foundations of each approach. We believe that this information will assist you in deciding on a style that best suits your personality and circumstances. You'll also be able to spot when your style is straying and, in general, keep a more disciplined approach to the market.

Day trading is a type of short-term, high-frequency trading.

Currency short-term trading differs from short-term trading in most other markets. A short-term stock or commodity deal usually entails keeping a position for one to several days. However, currency prices are continually shifting in small increments due to liquidity and narrow bid/offer gaps. Currency price action is stable and fluid, allowing for extremely short-term trading by speculators looking to make a few pips on

each deal.

Short-term forex trading entails holding a position for a few seconds or minutes at most, and seldom for more than an hour. Short-term currency trading, on the other hand, is not defined by time. Instead, it's the pip fluctuations that matter. Short-term traders strive to profit by continuously entering and closing positions after gaining only a few pips, often 5 to 10 pips but sometimes as little as 1 or 2 pips. Check read Chapter 3 for more information on high-frequency trading.

Pip by pip, robbing the market

Jobbing the market refers to extremely short-term, in-and-out trading in the interbank market; online currency traders refer to it as scalping. (The names are used interchangeably.) Because they're simply looking to make a few pips on each trade, traders that follow this strategy must be

among the fastest and most disciplined. Rapid reaction and immediate decision-making are crucial for successfully jobbing the market in terms of speed.

Scalpers must be merciless in both taking earnings and loses when it comes to discipline. You can't afford to lose much more than a few pips on each trade if you're only in it to make a few pips on each deal. The entire strategy clearly relies on being correct more frequently than incorrect, but the trick is to just risk a few pips on each trade. "Take the money and run," is the mantra, which is repeated a few dozen times a day.

Market jobbing necessitates an intuitive understanding of the market. (Rhythm trading is a term used by some practitioners.) Scalpers aren't overly concerned with the fundamentals. If you asked a scalper about a certain currency pair, she'd probably say something like "It feels bid" or "It feels

offered" (meaning she sees an underlying buying or selling bias in the market - but only at that moment). If you question her again a few minutes later, she might give you a different answer.

Scalpers who are successful have no allegiance to any single position. They don't give a damn if the currency pair rises or falls. They're only concerned with the next few pips. Either their job is paying off for them, or they're out the door faster than you can blink. They only require volatility and liquidity. In the appendix, you can find out if you're a scalper and obtain some trade ideas for this trading strategy.

Adapting jobbing to currency trading on the internet

In recent years, retail spreads have shrunk dramatically. Some pairs have spreads of less than one pip, while others have spreads of more than one pip. Jobbing can be a little

more difficult if you trade pairs or crosses with a greater spread; this doesn't mean you can't still undertake short-term trading; it just means you'll have to change the risk criteria of the strategy. Rather of aiming for 1 to 2 pips on each trade, strive for a pip gain at least equal to the spread you're dealing with in each currency pair. The other basic criteria, such as accepting only minor losses and avoiding holding a position for an extended period of time, still apply.

Other significant rules to remember when using a short-term trading strategy include:

Trading only the most liquid currency pairings, such as EUR/USD, USD/JPY, EUR/GBP, EUR/JPY, and AUD/USD, is recommended. The most liquid pairs will have the smallest trading spreads and experience less price swings.

Only trade when liquidity and market interest are at their highest. Short-term trading

techniques require consistent liquidity and a fluid market interest. When Asian and North American trading centers intersect with European time zones — around 2 a.m. to noon Eastern time — market liquidity is at its peak (ET). Other trading sessions may leave you with significantly fewer and less predictable short-term market changes to exploit.

Concentrate your trading on a single pair at a time. You'll need to focus entirely on one pair at a time if you want to capture second-by-second or minute-by-minute price swings. It'll also help you get a better sense of the duo if that's all you're viewing.

Set your default trade size so you don't have to define it each time you make a deal.

Look for a brokerage business that offers click-and-deal trading so you don't have to bother with re-quotes or execution delays. (For further information on broker

executions, see Chapter 13.)

Adjust your risk and return expectations to match the currency pair you're trading's dealing spread. Most main pairs have 1- to 4-pip spreads, so you'll need to catch 3 to 10 pips per trade to cover losses if the market swings against you.

Avoid trading on the day of a data release. Carrying a short-term position into a data release can be risky because prices can gap dramatically after the announcement, effectively destroying a short-term strategy. As nearby orders are generated 15 to 30 minutes before key data releases, markets are prone to fast price changes. This may result in a rapid change against your position that isn't settled before the data is released.

Keeping a clear view of the forest when in the woods

Individual traders must devote more time and

effort to researching the whole market while trading a short-term strategy online, especially from a technical standpoint.

You need to be right by a wider margin if you adopt a short-term trading strategy online, where dealing spreads can equal profit targets. Always know where you are in longer charting time frames to offer yourself a better opportunity of capturing somewhat larger short-term moves. To fine-tune your trade timing, entrance, and exit, use tick, one-minute, and five-minute charts. But

The wider picture offered by hourly, multihour, and daily charts will hold the keys to the larger directional moves, so be mindful of it.

Directional trading on a medium-term basis

If you thought short-term time frames were short, wait until you see medium-term time frames. Medium-term jobs often last anywhere from a few hours to a day or two, but not much longer. The essential differentiator for medium-term trading, as with short-term trading, is not the length of time the position is active, but the quantity of pips you're seeking/risking.

Whereas short-term trading aims to profit from the daily noise of minor price swings, with little consideration for the market's general trend, medium-term trading aims to get the market's overall direction right and profit from more major currency rate moves. Medium-term traders, on the other hand, understand that markets rarely stay in one direction for long periods of time, therefore they approach the market with well-defined trade entry and exit plans.

Almost as many currency traders engage in medium-term trading (also known as momentum trading or swing trading) as do those who engage in short-term trading. Short-term trading necessitates many of the same talents as medium-term trading, particularly when it comes to entering and leaving positions, while medium-term trading necessitates a different set of skills.

It also necessitates a broader viewpoint, more analytical effort, and a great deal more patience. In the appendix, see if you're a medium-term trader.

Taking advantage of intraday price movements for maximum impact

The essence of medium-term trading is determining where a currency pair is likely to move in the coming hours or days and developing a trading strategy to take advantage of that view. Traders that trade over the medium term usually have one of

two objectives.

The following are some general ideas, however there's lots of room to mix and match:

Having a fundamentally grounded opinion on which way a currency pair is expected to move is known as trading a view. The majority of view swaps are based on

interest rate expectations or economic growth tendencies are examples of current market themes. Technical levels must still be considered by view traders as part of their entire trading strategy.

Trading the technicals entails using chart patterns, trend lines, support and resistance levels, and momentum studies to determine your market perspective. Although technical traders usually detect a trade opportunity on their charts, they must also be mindful of fundamental happenings, as these are often the catalysts for technical level breakdowns.

Trading events and data: Taking positions based on what is predicted to happen in the future, such as a central bank rate decision or specific data reports. Typically, event/data traders will open positions well ahead of time and close them after the outcome is known (also known as buy the rumor/sell the truth, or vice versa).

Trading with the flow: Trading based on market direction (trend) or key purchasing and selling information (flows). To trade on flow data, look for a broker that provides market flow commentary, such as FOREX.com's Forex Insider (www.forex.com/forex research.html" research.html).

When does a trend stop being a trend?

When it comes to a range. A trading range, also known as a range-bound market, is a market that stays within a relatively small price range. A short-term (over the next few

hours) trading range in currency pairs can be 20 to 50 pips, while a longer-term (over the next few days to weeks) range can be 200 to 400 pips.

Despite the excitement around trends in various market books, most markets only trend about a third of the time. They're bouncing around in ranges, consolidating, and trading sideways for the most part.

If markets reflect all of the currently available information, substantial trends or shifts will occur only when truly new and unexpected information enters the market. Incoming economic data and events usually result in a price adjustment inside a dominant range rather than a breakout on a daily basis, but that's enough for medium-term traders to take advantage of the chance.

Using what you've obtained from the market

Large price fluctuations and trends are more the exception than the rule for medium-term traders. In the event of a downtrend, for example, instead of selling and holding, they're aiming to profit from the 50- to 150-point price falls that make up the entire downtrend. The idea is that medium-term traders will frequently take profits and walk back to assess market circumstances before re-entering.

Although medium-term traders typically seek larger relative price changes — say, 50 to 100 pips or more — they are also willing to take smaller profits based on short-term market behavior. For example, if a technical resistance level is broken, a target price move of 80 pips higher to the next resistance level is predicted, a medium-term trader will be more than happy to capture 70 to 80 percent of the expected price move. They aren't going to cling on to the position in the hopes of hitting the exact price target. It goes without saying that catching 75% of something is preferable to 100% of nothing.

Macroeconomic trading on a long-term basis

Long-term currency trading is often reserved for hedge funds and other institutional investors with large sums of money. Long-term currency trading might entail maintaining positions for weeks, months, or even years at a time. Holding holdings for that long entails being exposed to a lot of short-term volatility, which can quickly wipe out margin balances.

Individual margin traders can strive to capture longer-term trends with good risk management. The trick is to keep your position small enough in relation to your margin so you can sustain volatility of 5% or more. Mini accounts, which trade in 10,000 currency unit lots, are an excellent way to profit from longer-term price patterns.

Let's say you believe the euro will decline as a result of some member countries' high debt levels and the risk of sovereign bond default. For this scenario, the EUR/USD is trading

around 1.3500, and you believe it will drop to 1.1000 or even lower. However, if EUR/USD rises over 1.4500, you may believe the debt issue has been handled and wish to abandon the trade. You're risking 1,000 pips to win 2,500 pips in this situation. For a while,

The chance of losing $1,000 (10,000 0.1000 [1,000 EUR pips] = USD 1,000) or gaining $2,500 (10,000 0.2500 [2,500 EUR pips] = USD 2,500) on a 10,000 EUR deal size is $1,000.

Identifying macro factors that influence long-term trends

Long-term trading aims to profit from long-term price trends, which are influenced by macroeconomic factors. You should check out how some of the following macroeconomic chips stack up before getting into long-term speculation:

Interest rate cycles: Where are the relative interest rates of the two currencies now, and

where are they expected to go in the months ahead? Narrower interest rate differentials benefit the lower-yielding currency while harming the higher-yielding currency; wider interest rate differentials benefit the higher-yielding currency while harming the lower-yielding currency.

Economic growth cycles: What are the prospects for relative growth in the coming months? Higher interest rates are likely to be seen in the future in an economy that is in an expansionary period of growth, which would support that currency. Interest rate expectations may be lowered in an economy that is declining, damaging the currency in the process.

Currency policies: Do the major global trading powers regard the currencies to be overly overvalued or undervalued? Is the G20 or a national government/central bank pushing for a change in the value of a currency?

Fiscal deficits/surpluses or trade deficits/surpluses: Do the currencies have any big structural flaws that cause them to weaken or strengthen, such as fiscal deficits/surpluses or trade deficits/surpluses?

Investing in a core position

Just because you're trading with a long-term perspective doesn't imply you can't profit from major price fluctuations in the medium term if they're in your favor. Taking profit on a portion of your entire position after positive price movements is referred to as trading around a core position. You keep a portion of your initial position — the core position — and plan to re-establish the complete position if the market falls further. Remember, while you're winning, it's never a bad idea to take some money off the table.

When the currency pair you're trading reaches major technical levels, such as multiday or multiweek highs, it's prudent to take partial

profit on a long-term position. Taking partial profit near the top of the channel in an uptrend or near the channel bottom in a downtrend is one technique to judge when to take partial profit if the trend of the currency pair you're holding is displaying a channel on the charts.

The risk of trading around a core position is that the trend may not correct after you've taken a partial profit, leaving you with little opportunity to re-enter the market your ideal full-time job However, you're still holding the core of your position, and the fact that the market hasn't corrected indicates that your core position is doing well.

Strategies for carrying out carry trades

When you buy a high-yielding currency and sell a somewhat lower-yielding currency, you're doing a carry trade. The strategy generates revenue in two ways:

You can gain the interest-rate differential between the two currencies, called as the carry, by being long the higher-yielding currency and short the lower-yielding one. The interest-rate differential is against you if you have the opposite position — long the low-yielder and short the high-yielder. This is known as the cost of carry.

Spot prices rise in the opposite direction of interest rate differentials.

Traders who are long the high yielder are rewarded, raising purchasing interest, while traders who are short the high yielder are penalized, reducing selling interest. Currency pairs with considerable interest-rate differentials tend to shift in favor of the higher-yielding currency.

So, to clarify, all I have to do is buy the higher-yielding currency and sell the lower-yielding currency, then sit back and earn the carry while watching the spot price rise? What's the catch, exactly?

You are correct. There's a catch, and it's that any gains from the carry trade's interest-rate differential can swiftly be wiped out by downward spot price volatility. Excessive market positioning in favor of the carry trade might exacerbate the risk, implying that the carry trade has grown so popular that everyone wants to participate. Why should the price continue to rise after everyone who wants to buy has done so? Even more frightening, if the price begins to turn against the carry trade, it may cause a panic exodus from the trade, speeding up the price drop. Take a look at Figure 10-1 to get a sense of the possible trends that might emerge around carry trades, as well as the potential for sharp retreats.

Carry trades are most effective in low-volatility conditions, which are those in which financial markets are relatively steady and investors are obliged to chase yield. Keep in mind that to be appealing, carry trades require a considerable interest rate differential between the two currencies

(usually greater than 2%). Carry trades are also a long-term strategy since, depending on when you enter, you may be caught in a downdraft that takes days or weeks to unwind before the trade becomes lucrative again.

Major central banks dropped their benchmark interest rates to zero or almost zero in the aftermath of the Great Financial Crisis of 2008–2009, and many of them are still around that level, or even lower in certain countries, as of this writing. In recent years, near-zero interest rates have diminished the appeal of the carry trade, and it appears that it will be several years before interest rates are normalized and favorable differentials reintroduce carry trades.

Graph 10-1:

AUD/JPY

Trends higher in line with fundamentals of the carry trade (Australia's).

interest rates are on the rise.

significantly greater than Japan's), but it encounters significant setbacks along the way the path.

INVESTING ON AUTOPILOT

eSignal is the source of this information (www.esignal.com)

We mention algorithmic trading systems in Chapter 3 and state that they were mostly used by hedge funds and other institutional participants. Expert Advisors, or EAs for short, are automatic trading systems for individual traders that have sprung up as a result of the online forex market's rapid growth. EAs are another another trading strategy, and one that can combine several of the previous ones.

EAs come in a variety of sizes and shapes,

with differing levels of complexity and amount of rules. (EAs are also known as rules-based trading systems, as a trade signal is created anytime the system's rules are met.) Some are totally automated (nondiscretionary), triggering trades if market fluctuations meet the program's rules. Others create trade notifications and demand the user's manual confirmation before proceeding with a trade (discretionary).

Some EAs are available in a ready-to-use, black-box format, which means you'll be utilizing a trading model created by someone else and won't be able to change it. Other EAs are built-to-order, letting you to pick and choose which rules you want to apply to your trading.

Inputs that could be used to drive an EA system

There are virtually no limits to the number of inputs that may be combined to create an

EA's set of rules, but the majority of them are usually based on technical indicators or price movements. Here are a few of the most commonly used inputs:

Crossovers: These might be anything from moving averages to momentum oscillators (such as a 5 minute and 15 minute for a short-term EA or a 9 day and 21 day for a medium-term EA) (like stochastics or MACD, again of any time frame).

New price highs or lows: When new highs or lows are made, some trend-following models provide trade signals, usually based on the close of a predetermined time period, such as a new high on an hourly closing basis.

Time periods: Some EAs will only work during certain times, such as peak liquidity hours in the London afternoon/New York morning. Others will only work during specific data releases, when a directional shift is more likely.

Longer-term systems may search for a daily closing above or below a daily moving average, Ichimoku lines, or another technical approach.

There are nearly infinite options because many EAs are based on a combination of rules. Consider the following scenario on the long side of a short-term EA: If the 5 minute MACD is positive and the 5 minute RSI is 80, and the time is between 0600ET and 1200ET, and the day is between Tuesday and Thursday, buy EUR/USD (specify amount) on a new high 5 minute close. A similar feature for the sell side would be included in the EA, as well as a set of rules for exiting the trade. Please keep in mind that these rules have not been tested; we simply wanted to give you a sense of how an EA would look.

On models, the caveat emptor applies.

EAs come with their own set of risks and constraints. You wouldn't put on a blindfold

and go for a Sunday drive, so don't expect an EA to always give you a nice trip. All EAs are built on the basis of historical correlations between various parameters or rules. "Past performance is no guarantee of future results," as the ultimate risk statement goes.

Back-testing is used by EAs to assess their probable future trading results. Back-testing is the application of a set of rules to historical price data in order to determine how the system would have fared. By definition, the results are fictitious and do not reflect real-world trading situations (for example, execution slippage, re-quoting, or price gaps, to mention just a few). To be sure, historical linkages have a lot to recommend them, and we use them in our own mental models for FX trading. You must be aware that they can fail, and you must account for this in your trading strategy.

One of the most essential benefits of employing an EA is that if you use a nondiscretionary system, you remove

emotion from the equation, which may increase your trading discipline, which we'll discuss next.

Using social media to trade: The Crowd's Power

The advent of social media has revolutionized online currency trading. For forex traders, platforms like Twitter are not only a valuable source of news, but they can also be used to make trading decisions. We'll look at three of the most common strategies to use social media to aid your trading decisions in this part.

Surfing the crowds

Some brokers have created algorithms that scour Twitter, blogs, and other social media sites for bullish and bearish market sentiment. These systems may, for example, tell you if the bulk of the social media it trawled is bearish on the EUR, which would be a sell

signal. Although research on these systems is limited, several academic studies have demonstrated that they can have a predictive component that could be valuable in your trading.

However, there are disadvantages, such as the fact that not everyone shares the same sentiment. A regular user on Twitter ranting about the EUR may not be as knowledgeable as a prominent currency expert or fund manager who utilizes social media to explain why she believes the EUR will decline in the coming week. It's also important to understand that a sentiment indicator should not be used in isolation. When it's paired with additional tools, such as fundamental or technical analysis, it's even more powerful.

If you want to use a mood indicator, check with your broker to see if one is available. If you wish to use this type of system, keep in mind that there may be additional fees.

Long/short net positions

Another type of mood indicator is when brokers look at their own universe of customers or clients and report whether they are long or short a particular currency, commodity, or stock. You have the option of following or ignoring the crowd.

One frequent application of sentiment data is as a contrarian indicator. You may find that your fellow traders are more often wrong than right statistically, therefore if the data indicates that the "market" is long on the USD, you may choose to go short on the USD.

The universe of users who have been polled to find out what positions they're taking is one of the downsides. This data can be skewed by a small number of users or a single user with a large position, so use it at your own risk.

Follow the example of the leader.

Some currency brokers provide a service in which they broadcast their most successful clients' trades, allowing you to follow their every move. These trade leaders, for example, may enter a long EUR/USD trade; if you chose to follow them, you would receive an alert to enter the same trade, or you might request that trades be executed automatically for you in some situations.

Every slacker trader's fantasy. You essentially do nothing but follow someone who you believe is better at this than you are and benefit alongside them. There is no such thing as a free lunch, however. Keep the following in mind when copying trade leaders:

For followers, the fees for this service can be quite high, so make sure it's worth it before you sign up.

Make sure you understand how the performance of the trade leaders is calculated. For example, based on historical

performance, trade leaders can lose money and yet remain at the top of the heap.

Do your homework and don't believe that following a trade leader will solve all of your trading problems. Trade leaders, too, are in a poor spot.

Developing a Trading System

Whatever trading technique you choose, you'll need a well-organized trading strategy or you won't get very far. Trading with a plan versus trading without one can mean the difference between making money and losing money in the forex market. A trading plan is a methodical technique to carrying out a trade strategy that you've devised based on your market analysis and outlook.

The following are the essential elements of any trading strategy:

Choosing a position size: For each trade technique, how big of a position will you

take? Half of the equation for determining how much money is at stake in each trade is position size.

Choosing where to apply for the job: Where are you going to try to get the desired job? What happens if you don't reach your entry level?

Setting the take-profit and stop-loss levels: If it's a winning position (take profit), where will you exit it? If it's a losing position (stop loss), where will you exit it? The second side of the equation that determines how much money is at stake in each trade is the stop-loss and take-profit levels.

That's all there is to it — just three easy steps. But it's remarkable how many traders, both experienced and inexperienced, open positions without having properly considered their strategy. Of course, when creating a trading plan, you must consider a number of finer factors, which we will discuss later in this chapter. But for the time being, we only

want to emphasize that trading without a strategy is akin to piloting an airplane blindfolded — you may be able to get off the ground, but how will you land?

removing the emotional component from trading

Why is it so difficult for many traders to apply trading discipline if the key to successful trading is a disciplined approach — creating a trading plan and sticking to it? The solution is complicated, but it usually comes down to human emotions getting the best of them. Don't underestimate the power of emotions to distract and disturb when trading in any market.

So, how can you remove the emotion from trading? You can't, to put it simply. Emotions will flow as long as your heart continues to beat and your synapses continue to fire. And, to tell you the truth, the emotional highs of

One of the reasons why people are drawn to it in the first place is because of trade. There's no greater excitement than making a profitable deal and profiting from the market. So just realize that when you're trading, you're going to feel a lot of different emotions.

The longer answer is that, because you can't block off emotions, the best you can hope for is to understand where they come from, recognize them when they strike, and minimize their impact on you your business. It's easier said than done, but if you remember some of the following, you could discover that you're better able to control your emotions:

Concentrate on the pips rather than the dollars and cents. Don't let the precise amount of money made or lost in a trade distract you. Rather, concentrate on where prices are and how they're acting. The market has no notion how big your transaction is or how much money you're making or losing, but it does

know how much money you're making or losing.

It's not about doing things correctly or incorrectly; it's about getting money. At the end of the day, the market doesn't care if you were correct or incorrect, and you shouldn't either. Dollars and cents are the only actual indicators of trading success.

In a good majority of trades, you're going to lose. No trader is perfect all of the time. Losses are as much a part of the game as winning as well as profiteering With a sound risk-management strategy, you can still be successful over time.

You are not being pursued by the market. Whether you're trading or not, the market will do what it wants to do, so don't take your trading outcomes too seriously. Interpret them professionally, as you would any other business venture's outcomes.

Keeping your expectations in check

Currency trading is a relatively new potential for individual traders, and many people have no idea what to expect when it comes to price fluctuations. "How much can I anticipate to profit on this trade?" is a common question posed by newbies. Nelly, whoa, whoa, whoa, whoa, whoa, who It's a loaded question, to say the least.

The FX market is no exception to the rule that financial markets are not bank ATMs. There are a lot of individuals speculating on which way particular currency pairs will move; some of them will be correct, while others will be incorrect. Some people may be correct for a brief period of time, but they eventually find themselves on the wrong side of the equation.

Before you begin trading currencies, you should have a good understanding of what to expect in terms of trading results. Many people, like the one who asked the loaded question earlier, opt to focus solely on the positive aspects of forex trading. However,

losses are a part of trading. Even the biggest and finest traders lose trades from time to time.

Accepting that losses are unavoidable is one of the first steps toward trading discipline. The second stage is to commit to limiting your losses as much as possible. The hardest aspect of trading, according to most experienced traders, is keeping the money you've made and not giving it back to the market.

Creating plausible profit-and-loss situations

The relative size of gains and losses that you can expect will be determined by the trading style that you choose. Look into average daily trading ranges to have a fair notion of what to expect if you're trading on a short- to medium-term basis.

The average daily trading range is a mathematical average of each trading day's range (high to low) during a given time

period. Remember that this is only a statistical average; there will be days with wider ranges and days with smaller ranges. Furthermore, average daily ranges will differ greatly depending on the currency pair.

However, because the average daily trading range spans a full 24-hour trading session, it tends to exaggerate what intraday trading ranges may offer short- and medium-term traders. In general, rather than aiming for the home run, you're better off expecting more modest price changes of 30 to 80 pips.

And, unlike what any infomercial claims, you will not be able to retire just on a single deal. The most important thing is to hit singles and stay in the game.

Risk and reward must be balanced.

Trading is all about taking risks in order to make money. As a result, a common question is, "How much should I risk in any given

trade?" That is a difficult question to answer. Some trading books recommend using a risk/reward ratio of 2:1, which means that if you risk $100 on a trade, you should strive to make $200 in order to justify the risk. Others advise only risking a certain percentage of your trading account on any single trade. If you ask us, it's all a little fictitious, and it has nothing to do with market realities.

Looking at each trade opportunity separately and assessing the outcomes based on technical analysis is a better way to think about risk and return. This strategy has the advantage of being as dynamic as the market, allowing you to take advantage of trade opportunities based on current market conditions.

The usage of lever-age is another issue to consider when balancing risk and return (see Chapter 13). Leverage ratios of 50:1 or 100:1 are commonly available in online currency trading. The larger the position you can trade based on your margin, the higher the leverage

ratio. Leverage, on the other hand, is a double-edged sword because it magnifies both gains and losses.

The idea is to keep your overall leverage usage low so that you don't put all your eggs in one basket. If you use your margin to start the largest position available, you'll have very little cushion in case of price movements that aren't favorable. Trading as large a position as possible may be enticing, but who said cautious, risk-aware trading had to be enticing? Keep your feet on the ground and don't get caught up in the whirlpool of leverage.

Maintaining the condition of your ammunition

The margin you must deposit with your forex broker serves as the foundation for all of your trading. If the market goes against you, the amount of margin you put up will decide how large a position you may hold and for how

long (in pips). Unless you've just won the lotto, your margin collateral is a limited resource that must be used carefully.

"To trade or not to trade?" may begin Hamlet's famous soliloquy if he were living today and trading currencies. Overtrading is one of the most common blunders traders make. Overtrading is when you trade too frequently in the market or open too many positions at once. Both terms imply a lack of discipline and sound more like tossing darts at a board in the hopes that something will stay.

Staying out of the market, watching and waiting, and picking your deals more carefully are all examples of keeping your ammunition dry.

Is it an opportunity cost or a missed opportunity?

"You've got to be in it to win it," says one

popular market proverb. Despite the obvious truth, we would argue that trading prudence is preferable to trading valor. Open positions expose you not only to market risk, but they can also cost you market opportunity.

Your available margin is reduced after you initiate a position, limiting the number of additional positions you can open. If you're regularly participating in the market because you don't want to miss out on the next big move, you can end up missing it because you don't have enough open margin to fund a new position for the next major move.

Don't be concerned if you miss out on some business possibilities. No one is ever able to catch all of the motions. Instead, concentrate on your market research and the next well-defined trading opportunity. (In Chapter 12, we look at spotting trade setups.)

While you still have the ability to think clearly, take advantage of it.

Another advantage of trading less frequently is that you won't be swayed by the emotional entanglements that come with open positions. Surprise, surprise, if you ask a long EUR/USD trader what he thinks of EUR/USD, he'll tell you he thinks it's heading higher. This is referred to as "talking your book."

However, being out of the market, or square, allows you to take a step back and assess market trends objectively. That's when you'll be able to see opportunities more clearly and design a trade strategy to take advantage of them. You'll be on to your next trade all too soon, and the emotional roller coaster will begin all over again.

With technical analysis, you can cut through the fog.

This Chapter is about

Understanding technical analysis and what it isn't

Identifying the sources of support and opposition

Taking use of momentum in the appropriate way

Identifying key chart patterns

To say that the forex market has a lot of information to absorb is an understatement of epic proportions. To assist in making sense of all the data,

Professional traders focus on the one piece of information that is not subject to dispute or opinion: price. mation, most of which can be mere noise — the fog of the market — professional traders focus on the one piece of information that is not susceptible to dispute or opinion: price.

The topic of technical analysis is vast, and we won't be able to cover everything in this chapter. Hundreds of volumes have been written on technical analysis in general and specialized methodologies in particular (such as the Elliott wave principle or candlestick analysis). As extra reading, we recommend several of our favorite technical analysis books in Chapter 19. We strongly advise you to augment the information in this chapter with additional research.

The main elements of technical analysis as they pertain to the forex market are covered in this chapter, giving you as large a slice of the technical cake as possible. Furthermore, we take a trader's approach, focusing on the technical tools and approaches that have proven most beneficial in our personal currency trading, as well as what this means for trade strategies and detecting trade setups. That approach might get us in problems with certain technical purists out there, but hey, that's what makes a market — disagreements.

Technical Analysis as a Philosophy

Although it's certainly a stretch to call technical analysis a philosophy, many technical traders are practically cultish in their commitment to it. Technical analysis is, above all, a subjective method aimed at bringing order to seemingly random market fluctuations.

Technical analysis is used by traders to spot trade opportunities, fine-tune their trading techniques (entry and exit levels), and manage market risk.

Fundamentals inform our general perspective of market direction, while technical analysis refines that picture to find entry and exit points for specific trades. Technical analysis will occasionally propose a trading opportunity on its own, even if it contradicts our fundamental outlook (for additional information, see the Tips part of the "Candlestick patterns" section later in this chapter).

What is the definition of technical analysis?

Technical analysis, in a nutshell, is the study of historical price movements in order to forecast future price movements. You've definitely heard the caveat that "past performance is no guarantee of future results," a statement that tends to cast doubt on the validity of using historical price data to estimate future price movements.

Technical analysis, on the other hand, is capable of overcoming these worries based on two primary considerations:

Human beings make up markets. Whether it's the Dutch tulip mania of the 1600s, the dot-com boom of the 1990s, or the real estate bubbles of the last decade, human psychology and investing behavior haven't altered all that much. Historical price patterns that occur over and over in a variety of financial markets indicate the emotional forces that drive purchasing and selling decisions. You'll be able to use previous behavior as a guide to

what's likely to happen in the future as long as people make the decisions (or write the programs for the machines that make the decisions).

In all markets, technical analysis is commonly used. This is an example of technical analysis' self-fulfilling prophesy. The more traders who focus on technical analysis, the more likely their actions will reflect technical analysis interpretations, strengthening the impact of that analysis. Trust us when we say that professional currency traders who do not use some type of technical analysis are a rare breed.

What isn't technical analysis?

Technical analysis is not an engineer-designed, foolproof, guaranteed form of market analysis, despite its name. There aren't any such ways. Technical analysis is very subjective, and individual judgments might

differ greatly. Two technical traders looking at the same currency chart could come to completely different conclusions about the direction of the market pricing in the future Furthermore, depending on their timing and specific techniques, they could both be correct.

Technical analysis necessitates a significant deal of patience, practice, and experimentation based on the tastes and circumstances of the individual. Certain tools and tactics are more useful to short-term traders who are focused on the next few minutes or hours than they are to long-term traders. Longer-term traders that are interested in multiday or multiweek transactions employ entirely different tools and indicators. Some technical approaches are more effective in some currency pairs than others.

The overall volatility and liquidity of the market can influence which technical method is most effective. The goal is to create your

own strategy based on your unique circumstances, such as time constraints, risk appetite, and discipline (see Chapter 10 for more on this).

There is no one-size-fits-all technical indicator or method that always works. Avoid being overly reliant on any single indicator. When market conditions change, a particular indicator may produce excellent indications in some market contexts but fail when market conditions shift. We recommend that you become familiar with a variety of methodologies and indicators and use them to cross-check each other based on market conditions. (We'll look at this in more detail in the section on "Waiting for Confirmation" later in this chapter.)

Technical analysis in many forms

Technical analysis can be divided into three categories:

Price charts are examined visually to determine price trends, ranges, support, and resistance levels. (We'll look at chart analysis later in this chapter in "The Art of Technical Analysis.")

Identifies chart formations or patterns that provide specific predicted signs, such as a reversal or a breakout. (In the "Recognizing chart formations" section later in this chapter, we show you some of the most typical classic chart patterns and candlestick forms.)

Momentum and trend analysis: Examines the rate at which prices fluctuate in order to determine market sentiment toward the price movement. Trend indicators are used to identify whether or not a trend exists and how strong it is. (We'll study at these signs later in this chapter in "The Science of Technical Analysis.")

Obtaining both support and opposition

The concept of support and resistance is one

of the most fundamental concepts in technical analysis:

Support: A price level at which purchasing activity outnumbers selling interest, causing a price decrease to come to a halt, bottom out, or pause. Consider support as a price floor in a downturn.

The polar opposite of support is resistance. Selling interest builds up and inhibits or overwhelms purchasing interest, leading prices to peak, stall, or pause during a price rally. Consider resistance to be the price advance's ceiling.

Prior price activity, such as highs and lows, as well as short-term (minutes to hours) consolidation or congestion zones (when prices become all stopped up and can't move one way or the other for a period of time), are used to identify support and resistance levels. Trend lines can also be used to evaluate support and resistance. Fibonacci retracement levels, Ichimoku lines, and moving averages

are some more sources of support and resistance.

This is something we'll reserve for later in the chapter. From sloping and horizontal trend lines drawn off major highs and lows, Figure 11-1 displays some fundamental support and resistance levels.

Figure 11-1: Trend lines constructed from key highs and lows can be used to highlight emerging pattern formations and identify important support and resistance levels.

One of the most important notions in support and resistance is that when a support or resistance level is broken, the market shifts in the opposite direction. To put it another way, if a support level is breached in a downward move, it becomes resistance in subsequent price efforts to rebound. After an upside resistance level is broken, it may later act as support for further price advances.

Not all opposition and support are created

equal.

Support and opposition come in a variety of kinds and sizes. Some levels of support or resistance are stronger or weaker than others, and technical analysts usually categorize support as minor or major. However, those terms are highly subjective and impossible to define precisely.

Viewing a support or resistance level in the context of time and price significance is the best method to get a sense on its relative strength.

The larger the impact of a pricing point over a lengthier time frame. Weekly highs and lows are more important than daily highs and lows, which are more essential than hourly highs and lows, and so on.

Time period and longevity play a role in trend-line strength. A trend line drawn on daily charts is usually more powerful than

one drawn on hourly prices. A trend line that has been in place for six months is more significant than one that has been in place for only a week or two. The more a trend line is challenged (that is, prices touch it but do not break through it, or break through it just temporarily and by modest amounts), the more valid it becomes.

During a retracement, the strength of support or resistance levels is determined by the strength of support or resistance during the previous directional move. A price movement in the opposite direction of a previous price increase or decrease is referred to as a retracement. A retracement is the distance over which prices revert or retrace. Trend lines that were support in a downtrend, for example, will operate as resistance in any upward retracement. The strength of the trend-line support on the way down, such as how many attempts it took to break below it, will give a decent indicator of how strong it will be as resistance in the retracement.

Support and resistance are designed to be shattered.

We don't want you to have the sense that support and resistance levels are unchangeable market forces that are never tested or broken. Forex markets, on the other hand, spend a lot of time testing support and resistance levels, looking for a weak spot to push prices.

Various trading styles concentrate on various types of support and resistance:

The meat and potatoes of intraday trading are tests and breakdowns of short-term support or resistance levels. Short-term traders use nearby support and resistance levels (for example, 5- or 15-minute or hourly highs/lows and trend lines) as indicators of price movement.

Longer-term support and resistance levels are

tested and broken, which fuels longer-term trends and determines medium-term ranges. Medium- to long-term traders generally use longer-term support or resistance levels to guide their trading, such as daily/weekly highs/lows and trend lines drawn off of them.

The strength of follow-through that happens after a break of support or resistance levels is one of the keys to judging the severity of the break. The price action that occurs after a technical support or resistance level is broken is known as follow-through.

Because resistance has been surpassed, prices should accelerate higher when it is broken, as shorts who sold in front of the resistance buy back their positions and fresh buyers enter the market. Following the break of a technical support or resistance level, the amount of follow-through buying or selling that occurs, or does not occur, is a key indicator of the strength of the underlying move.

I'm awaiting confirmation.

We considered calling this section "Looking for Confirmation," but we felt it was too proactive, implying that if you go looking for something on a chart, you'll almost certainly find it and explain it as confirmation. Waiting for confirmation, or letting market prices show unequivocal indicators of a change in direction or break of a chart pattern, is a more rigorous method.

Price fluctuations that validate or confirm a technical observation that implies a specific outcome are referred to as confirmation. Certain chart patterns, for example, can be used to predict a price direction reversal. However, keep in mind that in this scenario, the starting point is that prices are moving in a trend or steady direction. Following a pattern that signals a trend is about to end blindly is extremely dangerous. After all, if the trend is your friend, why would you take the chance of going against it?

You reduce the chance of being wrong-sided or premature in your trade if you wait for price action to demonstrate that a directional move or trend is truly reversing, effectively confirming that the observed chart pattern is playing out as you expected. The trade-off is that a higher degree of assurance in the overall trade setup may come at the expense of a superior entry level. When you look at it the other way around, you're lowering your chances of getting into a trade setup too soon and being wrong if it doesn't work out as planned. The distinction is between making as much money as possible and losing money completely. Which one would you choose?

Technical-based observations give you a heads-up that a price shift is coming — for example, prices may be halting in a move higher, perhaps signaling a lower reversal. When prices break an established trend line, a previous high or low, or other major technical indicators, it is considered confirmation.

levels of support or opposition When looking for confirmation from various technical indicators, keep in mind that they could all be measuring the same thing in slightly different ways. The most important aspect of confirmation is the price.

Technical Analysis as an Art

The heart of technical analysis is chart analysis. Don't get too reliant on your charting system's fancy indicators and technical research. Your eyes and what's behind them are the most potent technical indicators you have.

In this section, we'll go over the fundamentals of drawing trend lines as well as some of the most typical, yet important, price patterns you'll see in your trading. In Chapter 12, we go through how to build and apply trend lines on a regular basis, as well as how to trade the chart formations you see.

There are two types of charts: bar charts and candlestick charts.

In this section, we'll go through the two main types of charts you'll most likely encounter while conducting your own technical analysis.

Markets are measured using price bars.

Most charting systems are set to display bar charts by default, which is perhaps the most popular type of charting among Western traders. Price bars, which comprise the major points of each trading period — the open, high, low, and close — make up bar charts. For short-term traders, a period is the time interval you've chosen to examine, such as 5 or 15 minutes, and for longer-term traders, 1 hour, 4 hours daily, or weekly (though short-term traders need to be aware of the longer periods, too).

Each bar is represented as a vertical line with a tick mark on either side. The period's open

is represented by the tick mark on the left side of the price bar; the period's closure is represented by the tick mark on the right side; and the period's highs and lows are represented by the upper and lower levels of the bar. Figure 11-1, for example, is a bar chart.

Bar charts are useful for drawing trend lines, calculating retracement levels, and assessing overall price volatility. The trading range for the period is shown by each bar; the broader the bar, the greater the range and the higher the volatility (and vice versa for smaller bars). Bar charts are best used for very simple analysis, such as determining a general trend.

Candlesticks are used to light the road.

We openly declare our preference: we prefer candlestick charts for spotting trade setups, particularly coming price reversals. Candlesticks, we believe, are one of the most potent forecasting techniques available.

We strongly advise you to study them further as part of a trader's arsenal. We also recommend Steve Nison's Japanese Candlestick Charting Techniques, 2nd Edition (for more on Nison's book, see Chapter 19).

Candlestick charts are one of the first known kinds of technical analysis, dating back to the 18th century trading in Japanese rice markets.

Candlestick charts, or simply candles for short, offer a more understandable visual representation of market motion than plain bar charts. They accomplish this by employing color and more clearly separating the important price points of each trading day - open, close, high, and low.

The components of two candlesticks are shown in Figure 11-2. You can see right away that one candle is lit and the other is black. What exactly does that imply? Consider the concepts of yin and yang, good

and bad, and up and down. The light candlestick shows that the closing was higher than the open, indicating that the day was positive. The dark candle signals a down day, as the close was lower than the open.

Figure 11-2 shows a candlestick's anatomy. Candlesticks are an easy-to-understand visual representation of price changes.

FOREX.com is the source of this information.

The true body, or just body, is the light/dark region in the centre of the candle that shows the difference between open and close. The lines above and below the body are known as tails (the name we'll use from here on), shadows, or wicks, and they reflect the period's high and low points. (In the "Candlestick patterns" section later in this chapter, we go over candlesticks in greater detail.)

Daily or weekly durations, rather than intraday periods like 1 hour or 30 minutes, are better for analyzing candlestick charts. Candlestick analysis is based on the idea that a full day or week of trade is required before the market makes a decision, perhaps providing signs about future direction.

Making a trend chart

Identifying and drawing trend lines is probably the most individualistic task in technical analysis. It frequently comes down to the fact that beauty is in the eye of the beholder. In chart analysis, however, order is beauty, and the trend lines you construct are the outlines of that order. In the end, drawing trend lines isn't that difficult; with a little practice, you'll be able to do it in no time.

What is the definition of a trend line? A trend line is a line on a price chart that connects major price points over a certain time period. The significant pricing points are normally

the highs and lows of bars or candles, though the open and shut levels of the candle's true body can also be used in the case of candles.

Putting the puzzle pieces together

Looking at the overall price chart in front of you is the beginning point for establishing trend lines. What do you think you see? If you've never seen a price chart before, it may appear to be a mess of meaningless bars or candles. The secret is

to turn that chaos into a clear picture of what's going on with prices (Throughout Chapter 12, we provide numerous graphical depictions of trend lines.)

Scanning the chart from left to right, beginning in the past and ending in the present is a good way to start. What is the state of prices? Are they going up, down, or a combination of the two? (You can guarantee they're doing a little bit of both if you look at a currency chart.) To capture the overall

range, draw your first trend lines to connect the highest highs (you only need two points to construct a line) and the lowest lows.

Within the time period under consideration When linking price points, always use the extreme points of the price bars or candles (lows with lows, highs with highs).

Take a look at what's going on in the space between the two trend lines. The whole is always made up of a number of smaller, discrete price fluctuations. To connect the highs of price moves down and the lows of price moves up, you can create trend lines. Regardless of whether other bars or candles later break the trend line, make sure you extend it all the way to the right side of the chart. Look for evenness, whether it's horizontal, slanted down, substantially higher, or somewhere in between. Price swings that break through trend lines will eventually break that evenness.

Because the prices on the right side of the chart are the most recent price movement, and beyond that lay future price developments, your ultimate focus will be on them. The goal is to weed out historical trend lines that are no longer relevant.

Keep the trend lines that have the most relevance (prices reverse course when they are hit, and they are largely unbroken) and extend them into the future. Those trend lines will work as support and resistance in the future, just as they have in the past, and will offer you with direction.

In search of symmetry

Be on the lookout for symmetrical patterns like parallel channels, sloping up or down, or simply horizontal while sketching trend lines. Look for horizontal tops and bottoms where previous highs and lows occurred.

It's worth noting that a rising trend line may be forming a triangle with a descending trend line. At some point in the future, the two lines will cross, and one of them will be broken, causing a price reaction.

The trend-line feature in most charting applications lets you construct a line parallel to another line or clone an existing line and move it to a parallel point. Experiment with that tool and you'll be astonished at how often price points correspond to it.

Recognizing the many types of chart formations

Another type of technical analysis that helps traders understand what's going on is pattern recognition, or the identification of chart formations in the market place In the sections that follow, we'll go through some of the most commonly seen chart formations and what they signify in terms of trading. Keep in

mind that the formations can appear in different charting time periods while you're browsing through them (for example, 15 minutes, hourly, daily).

The key to trading chart formations is to understand the time period during which they appear and factor that into your trading plan. On an hourly chart, for example, a reversal pattern may represent a reversal that lasts only a few hours or a day and retrace a comparatively modest pip distance. On the other hand, a reversal pattern on a daily chart could indicate a big multiweek reversal extending several hundred pips. Keep the formations you're seeing in the right time frame.

Basic chart layouts

Trends are accompanied by chart formations. They're usually categorized according to what they mean in the context of a trend. There are two sorts of chart patterns that are commonly

used.

Reversal patterns: A reversal pattern signifies the end of a previous directional price movement. It does not always imply that prices will begin to move in the opposite direction, though it frequently does.

Consolidation and continuation patterns: Consolidation and continuation patterns are pauses in directional price swings where prices go back and forth in a back-and-forth pattern before continuing the general trend.

Double-thickness tops and bottoms

Double tops and bottoms are among the most potent chart formations for suggesting a reversal in the direction of an overarching trend. In an upswing, double tops form, and in a downtrend, double bottoms form. On a daily AUD/USD chart, Figure 11-3 depicts a double-bottom pattern.

On a four-hour AUD/USD chart, Figure 11-1 displays a double top (not labeled, but you can see the two highs).

Figure 11-3: The creation of a double bottom shows that the previous downward trend may be reversing.

eSignal is the source of this information (www.esignal.com)

The notion underlying both in terms of market dynamics is that a directional move (up or down) will make a peak or low at some time. Following a period of consolidation, the market will typically test the trend's previous high or low.

If the trend continues, the market should be able to make a new high or low that is higher or lower than the previous one. If the market, on the other hand, is unable to surpass the previous high or low, it is interpreted as a sign that the trend is over, and trend followers begin to exit, resulting in the reverse.

Double tops and bottoms, like other chart formations, are rarely perfect. The second high or low may fall short of the previous high or low, and the inability to retest the previous high or low might result in a more quick and volatile reversal. Other times, as shown in Figure 10-3, the initial low may be surpassed by a small amount and for a short period of time (perhaps due to stops at the prior low being triggered), only to be rejected, resulting in the reversal.

Head and shoulders, as well as head and shoulders reversed

Head-and-shoulders (H&S) patterns, often known as triple tops, are another type of reversal pattern. After an upswing, the H&S top forms, and after a decline, the inverted H&S forms. Figure 11-4 depicts a classic inverted H&S pattern, which signaled the conclusion of the EUR's slide during the Eurozone debt crisis. In an uptrend, a peak is reached at some point, followed by a lower decline, forming the left shoulder. Following

that, a new high is made, resulting in the head, which is followed by yet another correction lower.

A third attempt to move higher fails to reach the second or highest high, and the left shoulder may be exceeded, equaled, or missed entirely. Failure to reach the previous high usually stimulates selling, and confirmation of a reversal comes when prices fall below the neckline, which is constructed by connecting the lows recorded after each pullback from the shoulder and head.

Figure 11-4: An inverted head-and-shoulders pattern in EUR/USD indicates that the euro's falls may be coming to an end after the worst of the Eurozone financial crisis has passed.

eSignal is the source of this information (www.esignal.com)

The distance from the top of the head to the neckline is the typical measured move target (the price move recommended by a chart

pattern) in an H&S pattern. When the neckline is broken, prices should move in the opposite direction.

Flags

Consolidation patterns that form in a counter-trend direction are known as flags. For example, if prices have gone upward (the trend is up) and have ran into resistance above, prices will begin to consolidate in order to create a flag a (counter-trend) descending channel The structure shows that the flag consolidation channel would eventually break out in the previous trend's direction, resuming the directional move. A bull flag, somewhat perplexingly, slopes downhill, but it's termed a bull flag since the bullish trend restarts when it breaks. A bear flag slopes upward, but the negative trend returns after it breaks to the downside.

The pattern is invalidated and may foreshadow a greater reversal if the opposing side of the flag channel is broken (lower end

of a bull flag/upper end of a bear flag).

Flags have a measured move objective based on the distance of the previous move that stopped, resulting in the development of the flag. As illustrated in Figure 11-5, when the flag is broken, the price objective is usually equal to the length of the flagpole projected from the flag break.

Figure 11-5: A bear flag consolidation pattern is broken.

on an hourly basis

NZD/USD exchange rate graph

indicates that the downtrend has resumed.

eSignal is the source of this information (www.esignal.com)

Triangles

Triangles are another sort of consolidation pattern that can be found in a variety of shapes:

Symmetrical triangles feature upward-sloping upper edges and downward-sloping lower edges, resulting in a horizontally pointing triangle. Symmetrical triangles are essentially neutral in terms of eventual breakout direction, but they have a little higher proclivity to break out in the direction they entered the triangle consolidation, indicating that the trend is returning.

Ascending triangles: These shapes have a flat or horizontal top and a downward-sloping bottom (see Figure 11-6). After resistance at the top is overcome, ascending triangles usually break out to the upside. The rising lower edge indicates that buyers are returning at ever-increasing levels in order to break through the horizontal top. On a breakout, the minimum measured move target is equal to the distance between the rising bottom and the first flat top.

Descending triangles: These are the inverse of ascending triangles, with the horizontal edge and expected breakout direction both to the downward.

Figure 11-6: The break of the flat top in an ascending-descending-descending-descending-descending-descending-descending-descending-descending-descending-descending-descending-the formation of a triangle denotes an breakout to the upside It's worth noting that the triangle's apex

AS A RESULT, HE ACTED AS A SUPPORTER

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Patterns of candlesticks

Candlestick patterns are among the most effective forecasters of future price movement. When it comes to the size of future price swings, candlesticks have little predictive power, therefore you'll need to look at other indicators technical analysis is used to predict the magnitude of future price movements. However, if you can nail the direction, you'll be well on your way.

(Chapter 12 delves more into using candles to construct trading techniques.)

There are two types of candlestick formations:

Reversal patterns are when a previous directional move comes to a halt and then reverses direction.

Patterns of continuation: When a previous directional move repeats its path after a time of consolidation.

We employ candlestick patterns to hunt for reversal signals because they're the most trustworthy of the candlestick patterns.

To interpret a candle pattern as a reversal indicator, there must have been a discernible directional change in the preceding days. The directional price move could be part of a longer uptrend or downtrend, or it could merely be a day or two of an obvious

directional move higher or lower, as evidenced by relatively large real bodies.

There are literally dozens of different candlestick reversal patterns, but in the next sections, we'll focus on the most common ones. Keep in mind that certain candle reversal forms are made up of a single candle, while others are made up of two or three candles. If you look closely, you'll notice that they're all variants on the same theme (namely that a directional move is losing force, increasing the potential for a price rever- sal). www.candlesticker.com is a great place to get free candlestick references.

Doji

Doji are among the most important candlestick patterns since their basic shape serves as the foundation for many others. A doji is a type of symbol.

When the close and open are the same, the result is a candlestick with no body — just a

vertical line with a cross on it.

On days when the close is only a few points off from the open, resulting in a candle with a very little true body, you can use some artistic license and consider it a possible doji based on the previous candles. If the previous days' candles were made up of long real bodies, the very little real body is more likely to be seen as a doji (or a spin- ning top, which we cover later in this section). A nice example is Figure 11-7.

This was due to the fact that the open and close were barely 5 pips apart. When you see a doji after a daily close, take note of it and assume that the previous direction- al advance is coming to a stop or is about to reverse.

Graph 11-7:

Following a rise higher,

A doji in the AUD/USD pair indicates that

the gains may be ready to reverse.

eSignal is the source of this information (www.esignal.com)

Doji are important because they indicate ambiguity and indecision. Consider a doji as a stalemate between buyers and sellers. A previous slide downward, for example, indicates that sellers are losing power and buyers are emerging. Figure 11-7 depicts a standard doji with the identical open and close and a trading range in the middle of the day.

The longer the upper and lower tails in a doji, the greater the market's perception of uncertainty, and the more probable the previous trend will terminate.

When two doji appear in a row, it's called a double doji. The additional uncertainty associated with a double doji tends to indicate that the price move after the market's indecision is addressed will be more

dramatic. A long-legged doji, or one with longer tails, is another sign that the market's uncertainty could be resolved with a stronger move.

A doji is considered neutral on its own. To establish that the doji is suggesting a reversal, you must wait for subsequent price activity, such as a trend-line break.

Shooting stars and hammers

Single-candle formations such as hammers and shooting stars suggest a possible reversal. Hammers occur following a decline and are distinguished by a lengthy lower tail (at least twice the height of the real body) and a short real body at the candle's upper end (akin to a doji or spinning top). A

After a rise higher, a shooting star has a lengthy upper tail and a small true body at the bottom of the day's range. The candle can be either light or dark in hue. The market

dynamic is the same in both cases:

In the event of a shooting star, buyers attempted to extend the gain after a price increase, but were beaten back by sellers at the end of the day, and vice versa with hammers.

The size of the tails is a good indicator of the signal's strength; the longer the tail, the stronger the opposing force to the previous move, and the more probable prices will reverse direction. A shooting star in Figure 11-8 indicates that recent gains may be about to reverse. (A hammer appears in Figure 11-10 as part of another candle design.)

One of our primary price reversal indicators is hammers and shooting stars. They're an excellent basis for establishing a position in the opposite direction and a signal to exit or at least reduce positions in the direction of the prior trend. If the signal is neutralized by exceeding the high of a shooting star or the low of a hammer, you must go. (For more on

candle trading strategies, see Chapter 12.)

Figure 11-8: A shooting star is a symbol of impending doom a price high and the possibility of a price reversal to the downside

The bullish engulfing line indicates that the decline is done and that a rebound is on the way may occur.

THE BODY OF THE WHITE CAN- DLE TOTALLY ENGULFS THE BODY OF THE PREVIOUS CAN- DLE

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Tops that spin

A spinning top (see Figure 11-9) is a single-candle formation with a small actual body and often short tails, similar to a fatter doji but with longer tails. (Larger tails could indicate a larger potential price shift.)

The size of the tails, on the other hand, is secondary.) The structure is named because its resemblance to a toy top. A spinning top, like a double doji, usually appears in pairs. The significance of a spinning top is that it has a small actual body, which indicates a decline in directional momentum following a series of up or down candles, which could indicate that a directional move is stalling and ready for a correction. Spinning tops require confirmation by following candles, but if you see a spinning top, be on the lookout for potential reversals.

Figure 11-9: Spinning tops are similar to doji in both shape and meaning, implying

uncertainty and the possibility of a directional reversal move.

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Lines that engulf you

Engulfing lines are two-candlestick patterns that can be bullish or bearish depending on whether they appear after a down or uptrend:

Bullish engulfing line: In Figure 11-8, the initial candle is dark, followed by a big light candle whose body entirely engulfs the body of the dark candle. The more strong the reversal signals, the smaller the body of the first candle (imagine spinning top – see previous section).

As seen in Figure 11-10 as part of another candle pattern, the first candle is light, followed by a lengthy dark-colored candle that engulfs the body of the first candle.

Engulfing lines are another one of our favorite candlestick patterns, and they provide a solid foundation for establishing a position in the opposite direction of the previous price move. The pattern is negated and you must leave if the high/low of the candle preceding the engulfing candle is exceeded.

Tops with tweezers and bottoms with tweezers

Tweezers formations are two-candlestick patterns that resemble the pincer end of a pair of tweezers, hence their name. In classic chart analysis, tweezer tops and bottoms (shown in Figure 11-10) correspond to double tops and bottoms, and they both indicate a reversal after failing to make new highs or lows. Long tails on the bottom after a move down, akin to a hammer, and long tails above after a move up, similar to shooting stars, characterize tweezer tops and bottoms. The tails' extremes should ideally be equal, but if the tails are long enough, we'll notice.

Figure 11-10: A tweezer top and bottom formation indicates that an uptrend is about to reverse and that a downtrend is about to begin.

The downturn could be coming to an end. The doji in the days leading up to the tweezer peak suggests that the upside outlook was already shaky.

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Many of the candlestick patterns we explore have two characteristics in common: lengthy tails and short bodies. We strongly recommend monitoring daily candle charts after each day's close (5 p.m. ET) and weekly candle charts on weekends to see if any patterns emerge as part of your technical analysis practice (see Chapter 12). They can be excellent indicators of where prices will go in the coming trading day or week.

Fibonacci retracements are a type of retracement that uses the Fibona

A retracement is a price movement that reverses the direction of the previous price movement. For example, if EUR/USD climbs 150 pips over two days and then falls 75 pips on the third day, prices are considered to have moved.

Half of the rise higher was retraced, or a 50% retracement of the move up. (A Fibonacci retracement of 50% isn't strictly a Fibonacci retracement, but it's included here because it's a popular halfway point for traders.)

The ratios between the numbers in the Fibonacci sequence, a virtually mystical numerical series that arises with regularity in the natural world and mathematics, give rise to Fibonacci retracements. The most crucial

The percentages of Fibonacci retracement are 38.2 percent and 61.8 percent, respectively.

As a secondary, but still significant, level, 76.4 percent.

An automatic Fibonacci retracement sketching feature is included in most charting programs. Simply click the starting point of a directional price move (the low for an upmove; the high for a downmove) and drag the pointer to the movement's ending point. The charting system will then show lines for 38.2 percent, 50 percent, 61.8 percent, 76.4 percent, and 86.4 percent.

Without a doubt.

Fibonacci retracement levels are commonly used by currency traders to determine support and resistance levels, and they are excellent examples of self-fulfilling prophecies in technical analysis. Figure 11-11 shows how Fibonacci retracement levels can operate as resistance during a price correction higher after a price decrease. As you can see,

For a while, the % retracement level put up a strong fight, but as it broke above, prices surged right past the 50% threshold and rocketed to the 61.8 percent level, temporarily exceeding it before a pullback. The 38.2 percent level effectively contained the downturn. Prices went on to go through 61.8 percent and then tested 76.4 percent, which held for a short time before falling down to 61.8 percent. They climbed higher from there, eventually breaking the 76.4 percent mark, indicating the possibility of a 100 percent retracement of the previous loss.

Figure 11-11 is an example of a diagram.

Drawing Fibonacci retrace- ments of previous direction- al price moves on your charting system will help you identify future support and resistance levels eSignal is the source of this information (www.esignal.com)

TECHNICAL ANALYSIS AS A SCIENCE

Relax. Technical analysis is neither extremely scientific nor particularly difficult. Many people in the industry use the term "science" to describe the mechanics of various technological instruments, but we believe that technical analysis is more art than science.

Before you can start deciphering what each instrument in technical analysis means, we need to outline a few actual features. You don't need to get too caught up in the arithmetic or computations underlying various indicators unless you're constructing your own systematic trading program.

Understanding what the indicators are measuring and what their signals indicate and don't mean is far more crucial.

Oscillators of momentum and studies

The rate at which prices move up or down is referred to as momentum. Momentum is a technical term that refers to the strength of the purchasing or selling interest that drives a price movement. In a downtrend, for example, the higher the momentum, the larger the selling interest. The lesser the selling interest, the slower the momentum.

Currency traders employ momentum indicators to determine if a price movement will be sustained, perhaps becoming a trend, or whether a direction has run its course and is now more likely to reverse. If

When momentum is positive and rising, it indicates that prices are rising, implying that active buying is occurring. When momentum begins to slacken, it indicates that prices are

moving more slowly, implying that buying interest is waning. If buyers' interest dwindles, sellers' interest may rise.

Because there is no practical way to estimate trading volume in real time, momentum takes on significant relevance in currencies. Volume data is an important measure of the significance of a price move in the stock and futures markets. A sharp price movement on large volume, for example, is considered legitimate and likely to be sustained, but a similar sharp price movement on low volume is discounted and considered more likely to reverse.

Because the mathematical representations of momentum are represented on a scale that sees momentum rise and fall, or oscillate, based on the relative speed of price fluctuations, momentum indicators are classified as oscilla- tors. There are several distinct momentum oscillators, each calculated using different formulae, but they're all based on the relationship between

the current price and previous values over a given time period.

Momentum oscillators are usually presented in a small window at the bottom of charting systems, with the price chart above, so you can easily compare price action with its underlying momentum.

Oversold and overbought

Extreme levels exist at the upper and lower extremities of the oscillator's scale, with the upper level being referred to as overbought and the lower level being referred to as oversold. Because overbought and oversold are relative phrases describing how quickly prices have changed in comparison to previous price changes, there are no fixed definitions. Overbought and oversold are terms that describe when prices have risen or fallen too quickly in comparison to previous periods.

When a momentum indicator reaches

overbought or oversold levels, many trading guidelines are suggested. It may be deemed a sell or buy signal if a momentum study reaches overbought or oversold region, then turns down or up and moves out of the overbought or oversold zone.

It is not necessary for prices to reverse direction just because a momentum indicator has reached an overbought or oversold level. After all, there's the

A trend is defined as a long-term directional price movement in which momentum remains overbought or oversold for an extended length of time while prices advance or decrease in the trend. Price movements that defy momentum analysis may be driven by breaking news or data, providing a fundamental urgency to price swings that defy momentum analysis. Momentum is merely a metric.

The idea is to wait for price confirmation that the previous trend or direction has changed.

Price and momentum divergences are a common occurrence.

Comparing momentum indicators to related price fluctuations is another good technique to interpret them. Momentum studies and price changes should, in most situations, go in the same direction. If prices are rising, for example, momentum indicators should be rising as well. Similarly, if momentum begins to stall and eventually turn down, you may expect prices to fall as well.

However, prices frequently diverge from momentum, particularly in shorter intraday time frames (15 minutes, 1 hour, or 4 hours) (meaning, prices may continue to rise even though momen- tum has started to move lower).

A divergence occurs when prices move in the opposite direction of momentum. New price highs are not matched by new highs in the momentum indicator, and new price lows are not matched by new lows in the momentum

study, indicating a divergence.

When a new price high or low is made, but momentum fails to make a corresponding new high or low, the price action is not confirmed, implying that the price move is fake and will not be sustained. As a result, the price is expected to change direction and eventually follow the momentum.

A bearish divergence occurs when prices achieve new highs while momentum is decreasing or not making new highs (indicating prices are projected to shift lower — move bearishly — in line with the underlying momentum).

A bullish divergence occurs when prices are making new lows while momentum is rising or not making new lows (indicating prices are projected to turn upward — bullish — in line with momentum). (We offer an example of a bearish divergence in Chapter 12.)

Divergences are excellent indicators that

something isn't quite right between prices and the price move's underlying strength or momentum. When you see a price-to-momentum divergence, you should pay closer attention to what's going on with prices. Are stop-loss levels being used in times of low liquidity? Or has some significant news recently surfaced that has caused prices to spike, and momentum will finally catch up?

Prices may continue to move in the direction of the trend (that's what a trend is), but at a reduced pace, leading momentum to diverge in a trending environment. You must wait for confirmation from prices before entering a trade based on a divergence to know for sure.

Using ranges and trends to generate momentum

Momentum indicators operate best in ranges, where price movements are somewhat restricted and there is no discernible trend or consolidation. As purchasing interest pushes prices toward the top of a range, selling

interest enters, stalling the price advance and sending momentum lower. As the purchasers change their minds, selling interest rises and momentum begins to fall, confirming the shift in trend. The identical process happens towards the bottom of the range, but in the opposite direction.

During breakouts and trending markets, momentum studies frequently produce false signals. This is particularly true when working with shorter time frames, such as hourly or shorter periods. Recognize that momentum studies are backward-looking indicators to fully comprehend why this occurs. All they can do is calculate the difference between current prices and previous prices. They have little predictive power, which is why you should always wait for price confirmation before trading based on a moment signal.

When momentum readings are in overbought or oversold territory, some of the most severe

price moves occur. Divergences in shorter time frames are also common, particularly during breakouts, when rapid price movements are not captured quickly enough in momentum studies. Prices may have already peaked or bottomed by the time the momentum indicator catches up with the price breakout, prompting momentum to imply a reversal divergence.

Just because momentum is overbought or oversold doesn't rule out the possibility of further market movement upward or lower.

The following are the most commonly utilized momentum oscillators by forex traders:

The Relative Strength Index (RSI) is a single-line oscillator that plots closing prices over a user-defined period on a scale of 0 to 100.

The RSI periods 9, 14, and 21 are the most common. The relative strength index (RSI) contrasts the strength of up periods against

the weakness of down times, hence the name. Overbought RSI levels are regarded overbought, while oversold RSI readings are considered oversold. When the indicator departs overbought or oversold region, as well as on price divergences, RSI indications are given.

Stochastic oscillator: A two-line oscillator with a scale of 0 to 100. The two lines are referred to as percent K (quick stochastic) and percent D (difficult stochastic) (slow stochastic).

Stochastics are also based on previous period's closing prices. The strength of a directional move can be evaluated by how close the close is to the period's extreme, according to stochastics. In an uptrend, a closing near the period's highs indicates strong momentum; a close in the middle or below indicates fading momentum. In a downtrend, the period's close should be closer to zero the lows in order for momentum to build. The percent K line will cross over the

slower-moving percent D line when momentum swings. Overbought crossovers

Signals to sell or buy include overbought or oversold area. Overbought is defined as a price above 80, while oversold is defined as a price below 20.

Moving Average Convergence/Divergence (MACD) is a technical indicator that measures the convergence or divergence of two moving averages. A sophisticated series of moving averages, rather than a momentum oscillator. (Because it works in a similar way as momentum studies, we've included it here.) Because the MACD fluctuates on both sides of a zero line and has no set scale, overbought and oversold positions are assessed in relation to previous extremes. MACD also has two lines: the MACD line (which is based on two moving averages) and the signal line (which is based on one moving average) (a moving average of the MACD line). When the MACD line crosses over the signal line while being below zero, trading

signals are generated or crosses below the signal line while above the zero line (buy) (sell).

Due to the longer durations commonly employed and the slower nature of moving averages, MACD generates signals more slowly than RSI or stochastics. As a result, MACD takes longer to cross over, resulting in fewer false signals in general.

INDICATORS THAT DETECT TRENDS

"The trend is your friend," as one of the market's favorite sayings goes. The concept is that if you trade with the existing trend, you'll have a better chance of succeeding than if you trade against it. How can you argue with that kind of logic?

For us mere humans, the difficult aspect is determining whether or not there is a trend in the first place. When you look at numerous time frames, the question becomes more complicated because trends might occur in any time range. The market may be essentially range bound on a daily time

frame. However, a trending movement in a shorter time frame, such as hourly or 30 minutes, may present an opportunity for short-term traders.

When selecting whether or not to follow the indications provided by momentum indicators, it's also crucial to determine whether or not there is a trend in place.

Momentum studies are useful in markets that are largely range-bound, but they often give false indications during trends and breakouts. The goal is to determine whether or not a trend exists.

In the sections that follow, we'll look at a few technical studies that can help you determine whether a trend is present and how strong it is.

System of Directional Movement Indicators

The Directional Movement Indicator (DMI) system is a collection of quantitative

techniques for determining whether or not a market is trending. The DMI is founded on the premise that when a market is trending, the price extremes of each period should exceed the prior price extremes in the trend's direction. In an uptrend, for example, each subsequent high should be higher than the previous period's high. The converse is true in a downtrend: each new low should be lower than the previous period's low. A trend is defined by this.

The ADX line (average directional movement index) and the DI+ and DI– lines (which correspond to directional indicators for up periods [+] and down times [–]) make up the DMI system. The ADX is used to identify whether a market is trending (up or down), with a value of over 25 suggesting a trending market and a value of less than 25 indicating no trend. The ADX is also a metric for trend strength; the higher the ADX, the stronger the trend. Traders can use the ADX to assess whether or not a trend is active and whether or not to adopt a trend-following method or

rely on momentum oscillator indications.

The DMI system, as its name implies, works best when both components are used. The DI+ and DI– lines are used to signal trade entry. A purchase signal

When the DI+ line crosses up through the DI– line, a buy signal is formed; when the DI– line crosses up through the DI+ line, a sell signal is generated. The extreme-point rule, according to Wilder, should be used to manage the DI+/DI– crossover signal. When the DI+/DI– lines cross, the rule specifies that you should note the period's extreme point in the direction of the crossover (the high if DI+ crosses up over DI–; the low if DI– crosses up over DI+). The DI+/DI– crossover is regarded a reliable trade signal if that extreme point is exceeded in the next period. The signal is not confirmed if the extreme point is not exceeded.

The ADX can also be used to predict when a trend will terminate or pause. The trend is

either stalling or terminating when the ADX begins to move lower from its maximum level, signifying that it's time to abandon the present position and wait for a new signal from the DI+/DI– crossing.

Moving averages are a type of average that is used to

Moving averages are one of the most basic and extensively used indicators in technical analysis, and they can be used to confirm existing trends, spot emerging trends, and generate trade signals. Moving averages are essentially a line overlaid on a price chart that represents the average of previous prices over a user-defined time period. Moving averages are divided into two categories:

Each historical price point over the selected period is given equal weight by a simple moving average.

The exponential moving average lends more weight to more recent price data than the

ordinary moving average, with the goal of catching directional price movements faster.

In terms of identifying a trend, an uptrend exists when prices are above the moving average; a downtrend exists when prices are below the moving average.

Traders like to play around with different moving average periods, but there are a handful that are more widely employed in the market than others, and they're worth keeping an eye on. The 21st and 22nd moving average periods are the ones to pay attention to.

There are three levels of difficulty: 55, 100, and 200. The 9- and 14-period moving averages are useful for shorter-term traders.

Combining two or more moving averages and using the crossovers of the moving averages as buy or sell signals dependent on the direction of the crossover is another approach to use moving averages. Using a 9- and 21-period moving average as an example, you

would buy when the faster 9-period average crosses up over the slower 21-period average, and vice versa for a downward crossover.

Ichimoku charts are used to trade with clouds.

Ichimoku Kinko Hyo charts, or "one-glance equilibrium," are another technical analysis approach popular in forex (and other financial) markets that was introduced from Japan. Ichimoku is a trend-following system that is often referred to as cloud charts because of its central component (the cloud, or kumo in Japanese). Ichimoku lines, on the other hand, can identify major support and resistance levels that are not found by more traditional technical tools.

Ichimoku charts are made up of five lines, as seen in Figure 11-12:

Tenkan line: A quicker moving average based on the average of the previous nine days' high and low.

Kijun line: The slower moving average based on the average of the previous 26 days' high and low.

The average of the Tenkan and Kijun lines from the previous 26 days, projected 26 days into the future. Senkou span A (leading span A):

Senkou span B (leading span B): the average of the previous 52 days' high and low, projected 26 days ahead. The space between the two leading spans is known as the cloud.

Chikou span (lagging span): Today's closing price was based on data from 26 days ago.

Figure 11-12: Ichimoku charts are useful for quickly determining trend direction.

tion, as well as resistance and support

levels that are not found anywhere else

FOREX.com is the source of this information.

Here are a few things to keep in mind: Ichimoku is a longer-term trading tool that uses a daily chart approach (weekly views are also possible). Intraday breakdowns of Ichimoku lines are rather regular, but only the daily close matters, strengthening its utility as a medium/longer-term trading strategy.

The current price's location relative to the lines, as well as line crossovers, are used to generate Ichimoku trading signals. When prices are above the cloud, the trend is up; when prices are below, the tendency is down. Crossovers of the Tenkan and Kijun lines also provide buying and selling signals, but the strength of the signal is determined by the price's position relative to the cloud. A weak sell signal is a Tenkan line crossover below the Kijun line (bearish crossover) with price

above the cloud. If the price is right,

It's a medium-strength sell signal that's inside the cloud. It's a strong sell indication if prices are below the cloud. Bullish crossovers work the same way, but in the opposite direction. The Chikou span is also used to determine whether a trade is legitimate.

Based on where current prices are in relation to previous periods, signals are generated. If there is an upswing, for example, the current price should be higher than previous periods, as indicated by the lagged span.

Intraday breakdowns of Ichimoku lines are regular, as we mentioned earlier, but they also have an uncanny way of acting as forceful support and resistance. The slower moving Kijun line, in particular, can be used to re-enter a trend by purchasing a downside retracement in an uptrend or selling higher rebounds in a downtrend. As part of our daily technical analysis process, we always make a point of observing the Ichimoku levels.

IDENTIFYING TRADE OPPORTUNITIES

Organizing market research to identify trading setups

Identifying critical degrees of support and resistance

Detecting trades and fine-tuning entry and exits using momentum

Candlestick patterns are used in trading.

Developing a real-time trading approach

It all comes down to spotting trade opportunities and implementing a trading strategy. Traders and speculators devote time and effort to keeping up with the market and staying informed. They research, plan, and strategize.

Continually scanning the market for trade opportunities, or setups, and waiting for the appropriate moment to enter and commit their capital. And they have a well-defined trade plan in place to lead them through whatever the market throws at them when they enter.

Market experts and commentators aren't short on thoughts and ideas, but ultimately, the trades you make are your decision. In this chapter, we'll go through how to detect trade opportunities and put together a risk-aware trading strategy to take advantage of them. Many of the technical analysis principles introduced in Chapter 11 are used in this chapter.

Establishing a Market Analysis Routine

The first step is to set aside time for market research. The more frequently you conduct research, the better sense you'll gain of where the market has been and where it's likely to go. Additionally, the more frequently you refresh your market knowledge, the less time it will take to keep current. It's much easier to keep oneself updated every day than it is to try to catch up on many days' worth of market news, data, and price changes.

Before you commit to a specific schedule, think about how much time you can actually devote to market analysis.

You may only be able to dedicate a little amount of time each day, so concentrate your efforts on one or two currency pairs. You can more efficiently follow and analyze many currency pairs if you have the time.

At the very least, you should set up at least an hour each day to monitor the market and keep track of incoming data and events. We prefer to stick to a schedule that focuses on:

Technical analysis using many time frames to find support and resistance levels as well as track overall price movements.

After each daily and weekly close, perform a candlestick and Ichimoku analysis.

Reading nightly economic data releases to keep our fundamental model up to date (see Chapter 7)

estimating the influence of impending data reports and events on the market

Reviewing market commentary to keep up with main themes and market mood

This may seem like a lot to fit into an hour, but with practice and time, you'll be able to get your charting and market information

sources in order, allowing you to streamline the entire process.

Performing a Technical Analysis with Multiple Time Frames

Examine the graphs in Figures 12-1, 12-2, and 12-3. Is there anything that they have in common? Don't be surprised if you don't recognize any of them; they all appear to be very different. But that is precisely the goal. They're all the same currency pair's charts, but in three separate time frames. As you can see, when it comes to chart analysis, seeing the forest through the trees takes on a whole new meaning.

Looking at charts utilizing different time frames of data is all that multiple-time-frame technical analysis entails. The basic concept is to start by looking at the large picture to find crucial longer-term aspects, then dig down into shorter data time periods to detect short-term price levels and trends. Our preferred time frames are daily, four-hour,

and hourly, but you can choose whichever time frames you think best suit your trading style. Short-term traders, for example, may choose to concentrate on 2-hour, 30-minute, and 5-minute charts in order to better reflect their trading time frames.

Graph 12-1:

EUR/USD

on the basis of a daily candlestick

chart.

eSignal is the source of this information (www.esignal.com)

EUR/USD in a four-hour candlestick (Figure 12-2).

chart.

eSignal is the source of this information

(www.esignal.com)

Whatever time frames you choose, we strongly advise you to include larger time frames, such as daily and weekly, to get a feel of where the most significant price levels are. The relevance and power of

The significance of support and resistance levels is determined by the time frame in which they appear, with longer-term technical levels having more significance.

compared to shorter ones You don't want to lose sight of the broader goal by settling for a break of short-term resistance, say, when substantial daily or weekly resistance is just beyond.

chart.

eSignal is the source of this information (www.esignal.com)

Because the technical levels on daily and weekly charts do not change as frequently as they do on shorter time frames, you can generally get away with updating them considerably less regularly. We repeat the identical charts as in Figures 12-1, 12-2, and 12-3, but this time we include our trend lines in Figures 12-4, 12-5, and 12-6. We begin by examining the daily chart in order to identify major levels and create longer-term trend lines. Then we go down to the four-hour chart and take a fresh look based on what we're seeing in that time period, adding more trend lines to encompass any pricing patterns or trends. Finally, we'll look at the hourly charts to get a closer look at the market's most recent price movement.

Ensure that the charting system you're using can save trend lines across time frames, which means that a trend line drawn on a daily chart should also appear on four-hour

and hourly charts, and vice versa. Also, make sure that the charting system can save the complete chart so that you don't have to redraw the trend lines every time you open it.

Keep trend lines that appear to be genuine (that is, price action has not broken through them) in subsequent updates, and delete trend lines that are no longer active or have been broken. However, don't rush to remove broken trend lines because they'll often operate as support or resistance again, but in the opposite direction.

Figure 12-4: Begin by sketching trend lines on longer-term data.

To detect key technical levels, use term charts such as weekly and daily (seen above).

eSignal is the source of this information (www.esignal.com)

Graph 12-5:

Drill to the core

from a long-term to a medium-term perspective

To establish critical medium-term goals, set a time limit, such as four hours (as indicated below) or two hours.

Levels of long-term support and resistance

eSignal is the source of this information (www.esignal.com)

Figure 12-6: Concentrate on shorter items.

Using one-hour time frames

(as seen here),

To discover short-term support and

resistance, use 30-minute, 15-minute, and shorter time frames.

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When support is lost, resistance arises, and vice versa.

The regularity with which you have to eliminate old trend lines will give you an idea of how proficient you are at recognizing meaningful trend lines over time. The more prominent the trend line was, the longer it contained price action or the longer prices reacted sub- stantially when it was broken. We keep some of our previous trend lines in Figures 12-4, 12-5, and 12-6 to give you an idea of how to create them and to show that some broken trend lines can still be valid.

Identifying the Strengths and Weaknesses of Support and Resistance

Your early-warning radar system is multiple-time-frame technical analysis. It notifies you of critical support and resistance levels that, if breached, would likely result in greater directional breakouts and potential trading signals. On the other hand, if the support or resistance levels persist, the price direction is likely to reverse.

You're well on your way to finding critical technical support and resistance levels now that you've gone through and evaluated a currency pair with trend lines in multiple time periods. However, while trend lines are one of the more basic but effective technical tools, there are still plenty of additional sources of support and resistance to consider. Figure 12-7 shows a chart depicting support and resistance calculated using the methods described in the following sections.

Figure 12-7: Using trend lines, major price points (highs, lows, breakouts), congestion zones, and retracements, identify short-term

support and resistance levels on an hourly chart.

LINES OF TREND

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Did you think you were finished with trend lines yet? As long as you keep drawing and redrawing trend lines, believe us when we say they're the presents that keep on giving.

Simply position the cursor of your charting system on the trend line at the current time period to discover support and resistance levels that correlate to the trend lines you've generated. If your charting system does not display the price value of the cursor placement on the right side of the chart, you may need to utilize the charting system's

crosshairs tool to see it.

Keep in mind that the slope of the trend line will cause price values to vary over time. If you find a trend line that is steeply sloping higher, for example, its market value will be higher in subsequent periods. To estimate how much the trend line will vary over time, move the cursor up the trend line and note the price level and time interval.

Make a mental note of the price levels of the trend lines you see and utilize them to place orders based on your fundamental or technical analysis. Trend line breaks are signs for short-term traders to follow the break. In the event that the break is not sustained, we recommend placing a somewhat tight stop loss of 20 to 30 points from the trend line (a false break).

Trend lines can also be used as entry points into trending moves, with buyers purchasing on uptrend pullbacks and sellers selling on

downtrend rebounds. Depending on whether or not a chart pattern is visible, the breakout may have a goal, or measured move objective (see Chapter 11), that you can use to place a take-profit order. Allow for a margin of error once more in case something goes wrong.

The desired level has not yet been attained. It's preferable to catch 80% of something rather than 100% of nothing.

Breaks of sloping trend lines must always overcome some immediate obstacle, such as the preceding high of a move up in the case of downward sloping trend lines, or the prior low in the case of upward sloping trend lines. Some technical traders ignore sloping trend lines entirely, focusing instead on recent highs and lows, as we will describe next. (By the way, you've probably figured out we're not one of them.) We'll leave it to you to decide whether sloping trend lines are important based on the charts in this book.)

THERE ARE HIGHS AND LOWS

After trend lines, markets tend to focus on period highs and lows as areas of support and resistance, which are commonly referred to as horizontal support/resistance. By merely noting the price high or low, you can pinpoint support or resistance levels. However, give yourself a few pips of leeway (5 to 10 pips) because different charting systems have different data feeds, which may have slightly different high/low readings.

When looking at a daily chart, it's relatively easy to spot the relevant high or low. When looking at charts with shorter time frames,

though, it's not always obvious which high/low to pick. Look for substantial price reactions from recent past highs and lows as a general rule.

The greater the distance between a high and a low, the greater the significance of that high or low as support or resistance. The price movement off the high or low is usually less significant the slower or less dramatic the price movement is. Look for lengthy tails on shorter-term candlestick charts, such as 30-minute or hourly time frames, to see if a previous high or low is acting as resistance or support.

Breaks of period highs and lows are used in many algorithmic trading systems. Prices must finish the time beyond the break of the high/low to be used as trade signals. Before going long, a short-term system, for example, must see the break of a recent hourly high sustained on an hourly close basis. Before

going short, a longer-term model will want to see a daily low break and a daily close below it. You can use such period closes as confirmation that the break is real, but you should always have a stop in place in case the level is crossed on a subsequent period close.

Zones of congestion

Congestion zones are price bands when previous price action gives place to consolidation or a period of sideways price action (see Figure 12-7 for more information) (a few examples) The majority of congestion zones are 30 to 50 pips wide, although

In more volatile pairs, such as GBP/USD or JPY crosses, they may be bigger. Unfortunately, there is no simple formula for determining whether the top or bottom of a congestion zone will act as support or resistance, so you must consider the entire zone as a possible source of support or resistance. Moving higher prices, for

example, could stall at the bottom of a congestion zone or make it all the way to the top. Prices are expected to move on to the next resistance level if the zone is cleared.

Fibonacci retracements are a type of retracement that uses the Fibona

When it's evident (or as clear as it can be) that a strong directional price move has paused and reversed direction, Fibonacci retracements should be drawn. (See Chapter 11 for further information on Fibonacci levels.) The retracements can be drawn using the Fibonacci retracement sketching tool, which is included in most charting programs. Figure 12-7 shows a Fibonacci retracement based on the most recent dip, and prices are now above it, so it could act as a support level in the event of a pullback.

Traders regard Fibonacci level breaks on a daily closing basis to be important. (For more on how Fibonacci level breaks can be used as

a trading signal, see Chapter 11.) Fibonacci levels can also be used as price movement goals, with take profits or stop-loss exit levels based on them.

The 76.4 percent Fibonacci level is a little-known Fibonacci number, but it's a critical turning point in more volatile currency pairs like GBP/USD. Just as you believe the 61.8 percent level has been broken and the market is headed for a 100 percent retracement, the market pulls back short at 76.4 percent.

Fibonacci retracements can be constructed for practically any apparent price movement, but their importance is directly proportional to the magnitude of the primary directional move. The greater the fundamental directional price move, the more significant the Fibonacci retracements will be as support or resistance. In general, don't get too wrapped up in calculating retracements of moves that are less than 200 points long.

Instead, concentrate on daily charts to identify the most significant price movements and calculate likely retracements from there.

Levels of Ichimoku

Ichimoku charts, often known as cloud charts, are a unique source of support and resistance levels. In Chapter 11, we go through the fundamentals of Ichimoku charts. Daily closures above/below the various Ichimoku lines are the key to recognizing trade opportunities with Ichimoku charts (Tenkan, Kijun, and the leading spans that make up the top and bottom of the cloud). On one hand,

Those levels may be breached on an intraday basis, but trading signals should only be taken on a daily close basis. A daily closing below the Tenkan line, for example, after a move higher, should be viewed as a cue to leave the prior trend, or potentially go short.

Ichimoku levels can provide actionable trading levels for intraday trading, providing seemingly invisible support or resistance levels to purchase or sell on during price swings. However, you should quit the trade if such levels are breached on a daily closing basis. Daily closures above/below Ichimoku levels provide a possible longer-term trading indication for longer-term traders with a wait-and-see mindset. When a trend is clear, we like to use pullbacks or rebounds to the Kijun line as prospective entry opportunities.

Using Channels to Find Symmetry

If you're new to chart analysis, the assortment of bars or candles on a price chart may appear to be the epitome of randomness. That is sometimes true, however you would be shocked how frequently symmetrical structures arise. We usually mean price channels when we say symmetrical formations, but we also imply other chart

patterns that we draw and explain in detail in Chapter 11.

The creation of price channels

A price channel is nothing more than a set of parallel trend lines that encapsulate price movement over a set period of time. Long-term channels on a daily chart displaying multiday or multiweek trading ranges, and short-term channels on an hourly chart revealing sustained buying or selling during a trading session, will occur in all time frames. Price channels can take any shape, from level to sharply sloping up or down, and all in between.

Visual inspection, utilizing your eyes and imagination, as well as some trial and error, is the best technique to detect price channels.
Creating a channel

The Copy a Line and Parallel Line tools,

which are basic in most charting programs, make this considerably easier. You only need one trend line to start looking for and creating potential channels – the major trend line. (In Figure 12-7, the primary trend line is the lower trend line in the primary upchannel.)

Look up at the peaks of the price action to determine if there is any parallel symmetry to the primary support trend line if the primary trend line is below the price bars or candles (support). If you're unsure, just follow the support trend.

Drag the line to the price bars' tops to see if it captures the highest highs. You've discovered a price channel if the duplicated trend line nicely fits onto the tops of the price movement.

However, the parallel side (the upper channel line for upward-sloping primary trend lines and the lower channel line for downward-sloping primary trend lines) does not always

behave as well as the primary side. During an uptrend, for example, most investors want to purchase, which is why price action frequently goes exactly to the primary channel support and then bounces higher. During uptrend rallies, however, there are usually fewer traders trying to sell, and price movement regularly exceeds the upper channel line. During declines, the same thing happens at the bottom of channels, when fewer buyers are participating.

When looking for channels, keep in mind that you may only have one or two price points opposing the principal trend line to connect the parallel channel line, especially if prices have just reversed direction and a new move is just getting started. When that happens, draw the parallel channel line — it'll stretch into empty space for now — but consider it simply a provisional channel top or bottom until more price activity confirms its veracity.

Of course, the purpose of searching for and

drawing channel lines is to highlight new sources of support or resistance. Price movements that are directional rarely travel in a straight line from point A to point B. Prices will normally go upward for a period of time before short-term buying enthusiasm fades or heavier selling interest emerges, causing prices to fall back to trend-line support. A channel is produced when this pattern is repeated multiple times.

You can utilize channels to guide both position entrance and exit as part of your trading strategy. Short-term traders, in particular, like to trade around a core position with channels, such as selling short on trend-line resistance then buying a portion of the position back if prices drop to channel support. They'll resale profits back toward trend-line resistance if the channel holds, reestablishing their fundamental short position. When channels break, it indicates that prices are either speeding in the trend's direction, as demonstrated by the channel, or that the trend is reversing, with prices

breaking out in the other direction.

Momentum is worth paying attention to.

In Chapter 11, we look at the meaning of various momentum indicators such as the Relative Strength Index (RSI) and stochastics. We strongly advise you to include two technical studies in your routine of multiple-time-frame technical analysis.

Including momentum analysis in your day-to-day routine

A momentum oscillator, such as the RSI or stochastics, should be the first research you include in your analysis. Moving Average Convergence/Divergence (MACD) is another indication we recommend. It's not exactly a momentum indicator, but it certainly acts like one. In fact, we prefer MACD to other momentum studies since MACD tends to change direction and generate crosses more

slowly. As a result, there are fewer false signals, but the signal may be delayed, resulting in a less advantageous price entry level. In actuality, the forex market's tendency to push a directional move as far as it can go for as long as it can is perfectly suited to the slower MACD signals.

The Directional Movement Indicator (DMI) method is the second study we propose you include in your analyzing practice (which we also look at in greater detail in Chapter 11). The DMI acts as a second opinion on the momentum study. The DMI's Average Directional Index (ADX) component is a trend detection signal that tells you whether the market is trending up or down.

Regardless matter the direction, is on the rise. When the market begins an extended trending movement, relying simply on a momentum analysis might lead to major complications.

Following a large directional move,

momentum studies frequently report overbought and oversold readings, potentially warning that the market is due for a correction in the other direction. Worse, as price movements invariably slow in the course of a directional, potentially trending movement, shorter-term momentum studies consistently cross over, providing a signal to trade in the direction of the trend in the opposite direction However, if a trend is gaining traction, such momentum readings might be extremely deceiving.

To see if trending circumstances are present, double-check momentum measurements with the ADX level. If the ADX is above 25, you should disregard the results of momentum studies. Don't dismiss the momentum research entirely; instead, pay attention to the ADX reading while it's above 25. When the ADX reaches its peak and begins to decline, you have a second indicator.

The directional move is likely coming to an

end, as tor is suggesting. If the ADX is below 25, pay attention to the momentum indicators.

Most charting software will let you save charts with numerous technical studies including MACD, RSI, stochastics, and ADX/DMI. We recommend overlaying the studies so that just one is displayed at a time, allowing the price chart, which is always the main focus, to take up as much room as possible. You can then switch between different studies whenever you like.

Taking a look at momentum throughout a number of time spans

You will be greeted with significantly different momentum readings across time frames, just as you were presented with starkly distinct pictures by looking at the same price chart in different time frames. Daily momentum readings could be negative and moving lower at any time; four-hour momentum could be approaching overbought

territory; and hourly momentum could have crested and turned lower.

Which of the two should you pay attention to? To put it another way, they're all of them. The trick is to keep each reading in context with respect to its time frame. The daily momentum values evolve over the course of several days and weeks. Shorter-term readings take place over a shorter period of time.

The idea is to align each period's momentum indicator with the study's time frame. Prices may stop falling for a few hours and maybe begin to move higher, according to an hourly measure that has bottomed out and turned higher, but this is far from certain.

To put the shorter-term readings into context, compare them to the larger time spans. If the hourly has bottomed out and begun to move higher, and the four-hour reading has bottomed out in oversold area, you may be looking at the beginnings of a greater upside turnaround.

However, if the four-hour reading is still in neutral zone and pointing lower, the hourly reading may only be a temporary pause in a downward trend.

We like to use four-hour momentum readings as the primary indicator of a directional price move's endurance. Shorter-term studies, such as hourly or 90-minute studies, are useful as early-warning indications and short-term timing aids, but they can be swiftly overwhelmed by significant directional price moves.

Daily studies are typically too sluggish to provide timely signs for short- and medium-term trading, confirming greater directional movements much later. The four-hour timeframe is a good compromise: it's long enough to catch intraday and multiday mini-trends without generating too many false signals, but it's also short enough to provide early warnings of impending reversals.

Investing in price and momentum divergences

We introduce the concept of bullish/bearish divergences between price and momentum in Chapter 11. In a word, a bullish divergence occurs when prices make new lows but momentum does not follow suit; a bearish divergence occurs when prices make new highs but momentum does not follow suit.

A bullish divergence between price and MACD is shown in Figure 12-8. A divergence between price and momentum typically signals that the latest price movement is false or unlikely to be sustained, and will eventually reverse course in the direction of the momentum, because momentum is an underlying gauge of the speed of a direction- ional move and, thus, an indication of the level of market interest behind the move.

As a result, a bullish divergence usually

indicates a price comeback after fresh selling creates new lows, while a bearish divergence usually indicates a price decrease after last-ditch purchasing achieves a new high.

Figure 12-8: When new price lows are made, a bullish divergence is generated aren't matched by new momentum lows, implying that the most recent pricing

It's possible that the downward trend will not last.

eSignal is the source of this information (www.esignal.com)

The key to employing divergences in trading is to remain patient and wait for confirmation. For example, the recent price rally could be the start of a new wave upward, and the momentum study could eventually flip around or catch up and confirm the recent gains, eliminating the apparent divergence. Prices can also deviate from momentum for

hours or even days. Take note of divergences whenever you see them, but remember to keep them in context:

Is there any new information (statistics, remarks, etc.) on the market? If there's breaking news, it could spark a new round of directional buying or selling, obliterating the divergence. It might provide for a great divergence setup if it's old news, such as reiterated comments or as-expected data that's previously been disregarded.

Are there any noteworthy new highs or lows in prices? Fresh selling activity may be entering the market if prices have broken below a major daily low or trend-line support, for example, resulting in a new wave lower.

However, if prices are merely falling below recent hourly lows, and longer-term support is still a ways away, the divergence will tend to imply that the price decline is bogus.

Wait for evidence that prices are truly reversing course in the direction of the momentum divergence before trading off divergences. While prices are diverging with momentum, there will usually be a critical trend line guiding prices higher or down. When a price reversal breaks that trend line, as seen in Figure 12-8, you can consider it confirmation that the divergence is starting to play out.

Entry and exit time based on momentum

Momentum studies can also be used to fine-tune the timing of your trade entry and exit. If your analysis has led you to believe that a long position is the way to go, and you've found critical trend-line support on which to buy, you may look at various time frames of momentum to see how likely prices are to reach that support.

If hourly momentum has recovered from oversold levels and four-hour momentum is

exhibiting signs of bottoming out, but prices are still 50 pips away from your trend-line entry level, you should consider buying ahead of the trend-line support.

Alternatively, if daily and four-hour studies are both solidly negative, and hourly momentum has just bounced higher but is now becoming negative, you can probably wait for prices to reach your desired price level. (In light of such bearish momentum readings, you might want to reconsider your entire plan.) You can utilize momentum studies to determine the chance of hitting your take-profit targets in the same way.

Momentum is merely a measure of the relative speed with which price movements move, and it is not always a leading signal of direction changes. Although you should always pay attention to what momentum studies are indicating in order to predict and prepare for different outcomes, you should always wait for confirmation from prices.

Even then, markets and events can throw you a curve ball, but at least you reduced your risk by waiting for price confirmation.

CANDLESTICK PATTERN TRADING

We highlight some of the most prevalent reversal patterns to look for in candlestick formations, which are among our favorite trade identification tools.

11th Chapter There are a slew of different patterns to choose from, some of which indicate trend continuance or consolidation. Obviously, we like to focus on reversal patterns since we believe they provide us with the most bang for our dollars in terms of analysis.

Although most trading manuals state that you

can examine candles in any time frame, we choose to analyze daily and weekly candles solely. We believe that price activity over the course of a day or week carries greater weight than price action during a few hours or smaller intraday periods.

Furthermore, a candlestick pattern that appears on a daily or weekly chart usually indicates a larger price movement (hundreds of pips) over the next few days or weeks, as opposed to smaller price movements signaled by intraday candle analysis.

Another useful property of candlesticks is that most of them have a clearly defined price level that contradicts the pattern's prediction. In the forex market, clarity is a rare commodity, therefore if you have a tool that provides typically well-defined scenarios, it's definitely worth including it in your analytical routine.

The problem with candlesticks is that they

only provide a broad directional indicator, such as a recent price surge higher that appears to be about to revert.

Even the phrase "reverse" does not imply that prices would fall - merely that they will likely stop rising. However, because prices in the currency market are continually shifting, when they stop moving in one direction, they usually start moving in the opposite direction. Another problem with candlestick formations is that they rarely provide tactical entry or exit price levels.

As a result, trading on the basis of a candle formation can be a risky proposition, as in "The pattern signals prices should trend lower in the coming days but doesn't indicate how high prices may go first."

Leave orders to sell at higher levels in the case of a bearish reversal pattern and to buy at lower levels in the case of a bullish reversal pattern as one approach to trade

candlestick reversal patterns. The selling level for the last move up would be on the approach to the highs, with a stop placed a margin of error above those highs, which should not be surpassed if the pattern is genuine.

On a bullish reversal pattern, a similar method might be utilized to buy. The theory is that the market might try again in the same direction as the previous move, giving you stronger entry levels depending on the candlestick formation.

Alternatively, or on an either/or basis with the aforementioned technique, you can select a major support/resistance level in the direction suggested by the candlestick pattern and place a stop-loss order to enter on the opposite side, in case the market moves immediately in the direction recommended by the pattern. In the following section, we go over a similar method in greater depth.

From beginning to end, developing a trade

strategy

If you've read any other trading books, you've probably seen plenty of chart illustrations where the writers can point to a chart pattern and say, "See, the pattern implies a price top," and the rest of the chart follows suit.

The chart depicts a downward trend in prices. Don't you simply despise it? Well, hindsight is 20/20, as they say. Don't get us wrong: in this book, we're all guilty of the same thing. To get the point across, it's almost inescapable.

You'll never have the benefit of hindsight in advance in the actual world. The future will be blank on every chart you look at. And that, my friends, is the everlasting struggle: making judgments in the present based on events that have yet to occur while putting your money at danger.

To make amends, we do something a little unusual here and illustrate a trading

opportunity in real time, or as genuine as a book can make it. What are the chances? We may have a lousy trade recommendation stored in book form for posterity if the transaction blows up in our faces. However, the purpose of this exercise is not to demonstrate how good or poor we are at recognizing trades.

It's to give you an idea of how you may assess the market and build a trade strategy on a regular basis, using many of the techniques we've covered in this chapter.

Figures 12-9 and 12-10 highlight some of the major daily and hourly price points we use to construct our EUR/USD trade strategy starting on March 21, 2011. In Chapter 11, we discuss how we prefer to employ fundamental factors to establish the overall direction of a currency pair's movement, and then use technical analysis to fine-tune entry and exit points.

So, how do the EUR/USD fundamentals weigh up? In our opinion, things are looking fantastic right now. European leaders have agreed on a long-term debt relief mechanism, and the market appears to believe it, easing concerns about financial instability.

The ECB has stated that it intends to raise rates at its next meeting in a few weeks, while the Fed has stated that rates would remain low for the foreseeable future, giving the EUR a monetary policy edge over the USD. In addition, the G7 acted for the first time in more than a decade a week ago to support Japanese attempts to contain JPY strength in the aftermath of the March earthquake/tsunami/nuclear calamity. The ECB bought EUR/JPY as a result of this action, boosting EUR/USD and risk assets in general. In addition, the US dollar is currently relatively weak.

As a result, based on the measured move target of the broken bull flag last month, we

predict EUR/USD to gain further (now 1.4230) to the 1.4450 to 1.4500 range first, with potential to approximately 1.4680.

Price is well above the cloud, as well as the Tenkan and Kijun, on daily Ichimoku charts, indicating a strong upward trend.

However, we're skeptical of buying at current levels because the EUR/USD has already gained ground on the fundamental issues we mentioned earlier. We also see the November 2010 highs around 1.4250/1.4280 as a potentially major resistance level. We don't want to get long 50 points below a significant daily high.

Rather, we'll try to get longer at higher levels. The break over the 1.4000/50 barrier, as shown in Figure 12-9, stands out as the most recent acceleration in the trend higher. Perhaps we'll be able to purchase a retest of the break?

Figure 12-9: Based on the broken bull flag,

the daily EUR/USD analysis shows prospective price objectives, although critical daily highs lie just above current values.

eSignal is the source of this information (www.esignal.com)

Another cautious sign is the hourly chart in Figure 12-10, which shows prices potentially prepared to wander out of the major channel. On the most recent highs, the hourly MACD is displaying a negative divergence, but it might also be basing out above the zero line, foreshadowing another rise higher. Cross-checking with the ADX, it started out above the 25 trending level and is still above it, albeit just. Overall, we believe there is a good foundation to expect a pullback downward as long as the 1.4280 highs are held. If they don't, we'll have a plan in place for that eventuality.

Then, for a single lot of 100,000 EUR/USD, we'll purchase a pullback around 1.4070, setting our if-done/then-OCO limit buying

order right above the important 1.4000/50 break barrier in case it's not hit. We'll set our stop below that zone, at 1.3980, with a 20-pip margin of error, for a total risk of roughly 90 pips ($900). Our take-profit order will aim to sell around 1.4420, just below important round number resistance in the 1.4450/4500 level, maybe on option-related selling interest as well, for a possible gain of roughly 350 pips, or $3,500. If the 1.4280/85 highs are tested, we'll boost the stop loss to 1.4200 to lock in some gains in case of a failure.

We're prepared to step up and purchase on a stop-loss basis at 1.4310, which would indicate a clear breach of both the 1.4280 highs and the 1.4300 level, if prices head directly higher. We won't wait if it's triggered, though.

Too long, in case the break fails in the end. For a risk of around 70 pips, or $700, we'll leave our stop at 1.4240. The take profit level will remain same at 1.4420, implying a possible gain of roughly 110 pips. We may

choose for a trailing stop loss of 70 pips and observe how the 1.4450/4500 level reacts, depending on the intensity of any follow-through buying over 1.4280.

Hourly EUR/USD shows some signals of a potential slowdown in recent increases, as shown in Figure 12-10.

MACD has a bearish divergence.

eSignal is the source of this information (www.esignal.com)

So, how did the deal go? Surprisingly, things went well, but we shifted our plan from a medium-term to a short-term transaction based on market movements. On Tuesday, the EUR/USD tried upward once again, but came up short of 1.4250, with a high of 1.4249 before turning lower. The EUR/USD fell to as low as 1.4054 (the Ichimoku Tenkan) due to a combination of weaker Eurozone data, better US data, and growing

fears about Portuguese debt (the government collapsed on Wednesday night).

On that day, our limit entry order at 1.4070 was triggered in European trade, activating our limit entry order at 1.4070 on Thursday morning. Following a dismal US durable goods data later in the New York morning, the EUR/USD soon climbed above 1.4120, triggering stop-loss orders at 1.4150/70 and reaching as high as 1.4220.

We were pretty optimistic in the overall approach after the rapid bounce from the important 1.4000/50 support area mentioned earlier. However, we were also aware of the critical resistance level of 1.4250/80, which seemed to be attracting sellers below it. We opted to safeguard our winnings by narrowing our order to a stop loss at 1.4145 (locking in 75 pips profit) and dropping our take profit to 1.4230, right below the break-up mark at 1.4150 earlier in the morning. The rest of Thursday moved in a range between

those levels, and we ended the day one lot short of 1.4070. In terms of the future, we believe that reports from the EU debt meeting might send EUR/USD lower in a hurry, and that

The German IFO survey, which is due out on Friday morning, is expected to fall, which might push the EUR/USD back down. We decided to quit the trade shortly after the New York close, selling at 1.4175 for a gain of 105 pips, or $1,050.

What did we accomplish well in the trade and what did we do badly? First, we spent time analyzing important price levels and determining an opportunistic entry level, putting our order slightly above key support in case it wasn't met. Second, we actively protected our winnings by altering our stop-loss order in response to changing market conditions.

Third, we kept our options open when it came

to abandoning the trade, taking into account technical levels as well as evolving fundamental events. Finally, and most importantly, we made a profit. The EUR/USD rate may have risen.

We may have lost out on our ultimate view of a higher EUR since it didn't go to the moon on Friday (it didn't, but that's another story). But the basic conclusion is that we devised a trade plan, followed it, and have a tangible result to show for it. You can't make a profit and go bankrupt.

What went wrong, and what did we do wrong? In hindsight, we should have been more aggressive and sold short above 1.4200, with a tight stop over 1.4250 or 1.4280, for a well-defined and low-risk trade. However, that would have been antithetical to our core expectations, and we would have been disappointed if it had failed. We might have also been gun-shy and hesitant to go long at even higher levels after that. So perhaps it wasn't such an awful idea after all.

We hope that this example demonstrates how to put it all together, using fundamentals, chart formations, and technical analysis to identify a trade setup and develop a trading strategy to take advantage of it. We look at factors and techniques for initiating positions, managing positions, and exiting trades in greater depth in Chapters 13, 14, and 15. A thorough list of actionable trading methods can be found in the appendix.

CONSIDERATIONS IN RISK MANAGEMENT

Identifying the many types of risk

Managing exaggerated expectations and leverage

Creating trade plans that are risk-averse

Making preparations for the unexpected

Risk is at the heart of trading, but it's often the last thing on many traders' minds. They're concentrated on the expectation of positive outcomes far too often.

"How much can I make?" is a question that many traders ask. That is, to a considerable extent, human nature. Why would someone invest in anything unless he believes he has a chance of winning?

When it comes to the dangers they're incurring, we believe traders should approach the forex market with their eyes wide open. And we're not talking about a straightforward risk calculation in dollars and pence. We are taking a look at

It's from the standpoint of a company's entire risk-taking mentality. The better you understand the risks you encounter in the forex market, the more likely you are to avoid them – and the higher your chances of success.

It's More Than Just Avoiding Losses When It Comes to Risk Management

At its most basic level, currency trading risk is the same as trading in any other financial market – you run the chance of losing money. Risk, on the other hand, can take numerous shapes and originate from a variety of places. The most dangerous threats are often the ones you were unaware of.

We feel that being forewarned is better than being unprepared. In this section, we'll look at some of the most common causes of danger that aren't always obvious or easy to overlook.

Gains and losses — as well as expectations — are amplified when using leverage.

The multiple applied to your available margin collateral, which corresponds to the maximum size of your market position, is referred to as leverage. Leverage is commonly stated as a multiplier rate (such as 10 or 20 times) or as a ratio (like 10:1 or 20:1). For example, if the leverage rate is 10-

times/ratio is 10:1, and you have $1,000 in available margin, you can hold a maximum position of $10,000.

The leverage ratios offered by online currency trading organizations are often higher than those seen when trading stocks on margin. Ratios of leverage

Standard-size accounts (100,000 trade-lot size) normally have a leverage of 100:1 while mini-accounts have a leverage of 200:1. (10,000 trade-lot size). Recent regulatory modifications around the world have reduced allowable leverage ratios to lesser levels, such as 20:1 in Hong Kong and 50:1 in the US, which we believe is more than enough for individual traders.

Forex brokerage firms that offer extreme leverage should be avoided. Some have advertised leverage of up to 400 times, or 400:1. We strongly advise you not to use that much leverage. Furthermore, due to legislative constraints on leverage, some

traders have gone jurisdiction shopping in search of the maximum leverage available, but have ended up in questionable jurisdictions that may pose additional dangers.

Leverage is an excellent trading technique because it allows traders with less money to participate in markets where they otherwise would not be able to. However, leverage is still merely a tool. You'll be able to get the task done faster and easier if you learn how to use it properly, just like any other tool (think of a chainsaw). You're asking for trouble if you don't learn how it works and appreciate it.

Most individuals only consider leverage's positive aspects: after all, the bigger the position on a profitable trade, the bigger the profit, right? Yes, leverage magnifies your profits, but it also magnifies your losses: the larger your position on a lost trade, the greater the loss. Trading requires a healthy respect for the negative risk, or you will not

stay long.

Consider a $100,000/lot account with $10,000 in first margin placed at a leverage ratio of 50:1. A maximum position size of $500,000, or five lots, is possible with that margin balance. Every pip change in USD/JPY is worth roughly $55.55 ([$500,000 0.01 pips] 90.00 = $55.55) if you take a position in USD/JPY at 90.00 using the highest position size available.

$55.55). However, price swings of 50 to 100 pip in USD/JPY are common in a single day (or more). You might lose if you're positioned incorrectly.

During a typical trading day, the price ranges from $2,778 to $5,555. In only one trade, you might lose anywhere from 28% to 55% of your trading capital!

The goal is to stay away from being lured by leverage. You don't have to use all of your

100:1 leverage just because you have it. Trading a larger position may appear enticing, but no one ever suggested that cautious, risk-aware trading should be enticing. Use leverage to help you execute your trading strategies, not to enhance your ego.

Being aware of your margin requirements

Margin is required by online forex brokers as security to offset any losses on your trading account. Online brokers often demand you to have 100 percent of available margin for any open trades to protect themselves from client losses eating up the entire margin (or going negative) in adverse market moves.

For example, if you're holding a $100,000 USD/CHF position at 50:1, you'll need at least $2,000 in available margin to keep the position open ([$100,000 100] 0.50 = $500). Your broker has the right to liquidate your

position, which is a fancy way of saying it closes out your trade for you, if your available margin balance goes below $2,000 at any time, even for a second or by a pip. Your losses have been locked in, and the amount of available margin has been lowered.

Computer applications are frequently used to keep track of margin balances depending on current market pricing. If your available margin falls below the required level as a result of a price change, the trade will be closed – no margin call, no communication, just a liquidated position. You may believe this is unjust, but brokers must liquidate losing positions at some point, or your loss will become theirs.

Before you begin trading, it is your job as a trader to read the fine print and understand the minimum margin requirements and liquidation procedures. In your customer account agreement, regulated forex brokers

must reveal their policies

Brokers' liquidity rules differ, with some closing all open positions at once (in the case of multiple open positions) and others shutting the largest losing position first until the minimum requirement for closing remaining open positions is satisfied.

As a trader, you never want to find yourself in a situation where your positions are liquidated owing to a lack of margin. It suggests you're trading a position that's too big for your available margin, or you've let your losses run too long in relation to your margin. Each trading plan must account for the minimum margin need, and it should never come close to doing so, or you'll be better off taking smaller positions. Later in this part, we'll look at the crucial relationship between position size and margin.

Market liquidity, volatility, and gap risk are all factors to consider.

The forex market is frequently referred to as the world's most liquid financial market, and this is correct. However, this does not negate the fact that currencies are sensitive to fluctuating liquidity situations.

The quantity of market interest (the number of active traders and the overall volume of trading) present in a given market at any one time is referred to as liquidity. Liquidity is usually defined by the volatility of price changes from the perspective of an individual trader. Prices tend to fluctuate very slowly and in small increments in a very liquid market. Prices change more abruptly and in larger price increments in a less liquid market.

Volatility might be exacerbated by changing liquidity conditions.

As global financial hubs open and close in their respective time zones, forex market liquidity will fluctuate during each trading day. The Asia-Pacific trading session, which

accounts for only approximately 21% of worldwide daily trading volume, is the first to show signs of reduced liquidity. Because there is less trading activity to counteract the directional shift implied by the news, statistics from Japan, China, or Australia, or remarks from regional finance officials, may produce a larger-than-expected or more-persistent reaction.

When European and London markets are open, peak liquidity conditions apply, overlapping with Asian sessions in the morning and North American markets in the afternoon. Following the closing of European trade, liquidity in what is known as the New York afternoon market declines dramatically.

Currency rates are prone to wander in narrow ranges during periods of limited liquidity and interest, but they are also subject to more rapid and dramatic price fluctuations. A news event or rumor could be the impetus, and the limited liquidity causes prices to react more quickly than during more liquid periods.

Short-term market positioning is another prominent source of erratic price movements during less liquid periods. A significant surge in a currency pair during the North American morning/European afternoon is a classic example. The currency pair usually settles into a consolidation range towards the top end of the day's advance as Europe returns home. Further price rises may cause some shorts to cover their bets if sufficient short positions have been opened on the rally purchase and cover With less liquidity, prices may spike unexpectedly, triggering a torrent of comparable buying from other shorts, resulting in a short squeeze higher.

Following market drops, the same phenomena might occur, where market longs are obliged to quit in a hurry to avoid further price declines. Another variation on this topic is abrupt price reversals following an earlier gain, where longs take advantage of the opportunity.

Profits are made under thin conditions, and the accompanying price drop prompts other longs to sell in order to protect their gains. Profit-taking on short positions after a sell-off can trigger a strong short-covering reversal.

There's no way to know with any certainty how price movements will develop in such illiquid periods, and that's the riskiest part of the equation. The bottom line is that holding a stake in the market during periods of low liquidity exposes you to a higher risk of more volatility price action.

Market holidays in several nations, as well as seasonal periods of low market interest, such as late summer and around the Easter and Christmas/New Year holidays, lower liquidity.

Holiday sessions are typically marked by lower volatility as markets succumb to inertia

and trade in narrow ranges. Sudden breakouts and large trend reversals also heighten the risks. Hedge funds and other aggressive speculators take advantage of low liquidity to drive prices past important technical levels, forcing other market participants to react late, accelerating the breakout or reversal even further. The market may have moved hundreds of points and established a whole new direction by the time the holiday is finished.

Just because you're enjoying a long holiday weekend doesn't mean you're not at risk from increased holiday market volatility. You are, and you must take liquidity conditions into account in your overall trading strategy.

Getting a Glimpse of the Volatility

Volatility is a statistical word that refers to price changes (standard deviation) in comparison to the average price over a given

time period. Volatility is what keeps the trading world spinning, and speculators would be idle if it weren't for it.

However, not all volatility is created equal, and you should be aware of the following two types of volatility that might affect the currency market:

The aggregate level of price volatility in multiple financial markets at any given time is referred to as market volatility. The VIX S&P 500 Volatility Index is an excellent general indicator of market volatility. During situations of uncertainty or unanticipated economic data or monetary policy moves, market volatility tends to rise. If you trade short-term or use a model that relies on low volatility (such as mean reverting systems, moving averages, or regression channels), you should be aware that rising volatility can quickly overwhelm such tactics. Staying on the sidelines and riding out the storms is

preferable to jumping in with a strategy that isn't designed for heightened volatility.

Currency-pair volatility: In both the short and long term, different currency pairs trade with varying volatility characteristics. Make sure you're aware of the relative volatility of a currency pair before you go with a trade setting you saw on a chart. (In Chapters 8 and 9, we go through specific currency-pair volatility and other trading features in greater depth.)

Keeping the gap in mind

The possibility of prices gapping, or jumping from one price level to another with no tradeable values in between, is known as gap risk. Economic data releases, central bank rate decisions, and other important news events are generally related with gap risk. In this manner, the majority of gap risk can be

identified ahead of time by looking at data and event calendars. Price differences might also be triggered by unexpected news or official statements. Price gaps can also be caused by the breaking of critical technical levels.

Price gaps of 20 to 80 pips or more are not unusual in currencies after important news and data events, depending on the nature of the news. The interbank market cuts its bids and offers in the minutes before and after important announcements, leaving online currency trading platforms with no prices to show individual traders, resulting in gaps.

Interbank traders modify their prices to reflect the news after it is released, resulting in a price gap higher or lower. Normal pricing may not restore for up to 30 seconds (or longer, depending on the news or event).

You're vulnerable to gap risk if you have open positions during important data releases or events. Stop-loss orders left with online brokers are also exposed to gap risk; stop-loss executions are also subject to gap risk. Stop-loss order executions may experience slippage depending on market conditions (meaning, your stop-loss order may not be filled at the rate you specified). Brokers are only required to fill your order on a "best efforts" basis if there are pricing discrepancies.

Expect to be unable to leave a stop-loss order on either side of the market and have it filled at your order rate before a major news or data event. Occasionally, the market will cancel both sides of your stop-loss orders before the release is released, resulting in a loss. If that doesn't happen, and the market gaps through one side of your order, you'll be susceptible to slippage, which means your order will be filled wherever the market starts trading, which might be a long way from where you

left it.

If you think this is a ruse developed by online brokers to take advantage of individual traders, consider the following: Individuals trading online have the same gap risk as big players in the interbank market. Even

If you were a prop trader at a huge bank, and one of your own bank's traders was watching your order, you'd get filled where your order was.

The trader has the ability to carry out the order in the market. Online brokerages are in the same boat. Bottom line: No market maker will last long if he fills his customers' orders at rates he doesn't have access to.

The other form of gap risk arises from weekend events, which could result in a large

difference between Friday's closing price and the Sunday/Monday opening price. Because it usually occurs around scheduled events like a G20 meeting or a Chinese data release, weekend gap risk can usually be identified ahead of time.

However, there is still the possibility of unforeseen events (earthquakes, terrorism, and currency revaluations or devaluations, to mention a few) occurring on weekends. To assess the risks of a weekend gap, you'll need a thorough understanding of what's going on in the key currency countries, as well as a robust sense of the unexpected. The safest strategy is to avoid holding positions over the weekend.

We have a winner on our hands! Keeping your profits safe

It's one thing to speculate in the market and make a mistake in terms of direction. That's just plain old-fashioned risk-taking, and it's all part of the trading business. It's a

completely different outcome to get the direction correct and yet lose money, or to make less money than you could have, or to keep less of what you've already made.

Most traders are willing to embrace the possibility of making a mistake in direction. They brush it off and get back to work as quickly as possible. Take, for example, a trader who has a winning position in the morning but loses money in the afternoon, and you have a case study of negative trader emotions. It's a simple example of avoiding missing out on what you never had with a wrong-way exchange. It's difficult not to feel regret or believe the market is out to get you when a good trade goes wrong.

Experienced traders understand that keeping what you've earned is often as difficult as making it in the first place, so they actively preserve their gains. The

Once the trade is in the money, the best approach to do this is to adjust your stop loss in the direction of the trade. You can do this by employing a trailing stop loss or manually altering your original stop loss if certain price thresholds are breached.

A trailing stop loss is a stop-loss order that follows the market at a predetermined distance (say, 40 pips). If you're short at 55 and have a 40-pip trailing stop loss, for example, the stop will start at 95. The trailing stop will adapt when the market swings lower, ensuring that it is always 40 pips off the low.

Your trailing stop is now at 50 if the market drops below ten ensuring a profit of at least 5 pip Because they require on a market reversal of x pips before being activated, trailing stops are ideal for spotting longer-term swings.

If you prefer to trade based on technical levels, you might want to consider manually

changing your stop loss when certain levels have been broken. If you're long, for example, when technical resistance is broken, you might boost your stop loss from its previous level.

Above all, if the market turns against you and your profit begins to drop, don't stress about recouping what you've just lost; instead, focus on preserving what you still have.

Effectively placing your orders

Currency traders use orders to profit from price fluctuations when they are unable to watch the market themselves, as well as to protect themselves against bad price swings. If you're going to trade currencies, you'll almost certainly use orders as part of your entire trading plan. In Chapter 4, we go through the various types of orders in greater depth.

Limit orders, which are used to purchase or sell at rates better than current market prices, and stop-loss orders, which are used to buy or sell at rates worse than current levels, are the two basic types of orders. The main distinction between the two types is that you want your limit orders to be filled but not your stop-loss orders to be triggered.

Limit orders are used to take profit and enter positions (which you wish), whilst stop-loss orders are primarily used to exit losing situations (which nobody likes). (The only exception is stop-loss entry orders, which are used to enter a position — for example, on a breakthrough [see Chapter 14].)

When you use orders, you run the danger of missing out on filling your take-profit limit or entry orders, or having your stop-loss orders triggered at extreme price points. The problem is that amid the daily noise of daily changes, markets have a tendency to go after stop-loss orders while ignoring limit orders.

As a result, the location of your orders is crucial to your overall trading strategy. Deciding where to put orders is more of an art than a science, and even the most seasoned currency traders have difficulty deciding where to place their orders.

Taking the dealing spread into account when placing orders

The dealing spread of currency pairs and the order execution procedures of online currency trading platforms are two more difficult considerations for online currency traders.

A limit order to sell is filled when the bid price meets the order rate, and a limit order to buy is filled when the offer price reaches the order rate on most online platforms. If the bid price hits the order rate, a sell stop-loss order is triggered, and if the offer price reaches the order rate, a buy stop-loss order is executed. The dealing spread works against the order in

both circumstances, and traders must account for this.

You might be long USD/CHF at 1.0250 with a limit, take-profit order to sell at 1.0330 and a stop-loss order to sell at 1.0200, for example. The dealing price must print 1.0330/33 for your take profit to be executed. No cigar if the highest price provided is 1.2329/32. If the dealing price ever trades at 1.0200/03, your stop loss will be triggered; if the lowest quoted price is 1.0201/04, your order will still be active. As you can see, it's frequently a milliseconds-long game of inches.

When arranging orders, consider technical levels.

Many traders use technical levels to determine where their orders should be placed. Continuing the order example from the previous section, if a trend line or hourly

highs provide resistance near the 1.0330 level, several more sell orders might be grouped there. If there is enough selling interest, the market may never reach that level because sellers will line up in front of the resistance level, begin selling, and prevent prices from increasing.

The stop-loss level could be set on Fibonacci retracement support or recent daily lows, which could encourage other technically oriented traders to set their stops at the same level. Whether the market begins to fall, sellers will usually try to test important technical-support levels to see if they can break through.

If they hold, stop-loss orders placed at those levels will be triggered. The stops may be activated, and the level may be briefly breached, only for prices to rebound and the support to hold.

Stopping out at the top or bottom of a market

is an extremely irritating experience, yet it happens to everyone at some point. Always keep in mind that someone must sell at the low and buy at the high.

MARKET EXTREMES AND MARGINS OF ERROR

Allowing for a margin of error when placing orders is one strategy to avoid being stopped out by market extremes. It's a good idea to use a margin of error.

The objective is to err on the side of having your limit order filled by leaving a sell order a few points below key resistance levels or a purchase order a few points above key support levels. The margin of error should at the very least include the dealing spread of the currency pair you're trading.

The idea behind stop losses is to err on the side of not letting them to be activated, leaving a stop-loss sell order several points below crucial support levels and a stop-loss buy order several points above technical resistance levels.

The margin of error in both circumstances is determined by the relative volatility of the currency pair you're trading as well as market volatility at the time. In general, the higher the volatility, the higher the margin of error, and vice versa. (In Chapters 8 and 9, we go more into individual currency pair volatility and trading behavior.) Limit orders with a limited margin of error, such as 5 to 10 pips, are our personal choice. We like to utilize a bigger margin of error for stop losses, around 20 to 40 pips, to provide more cushion in case other people's stops are activated and the technical level is briefly broken.

Using a margin of error in order placement may force you to reconsider your whole trading approach, particularly in terms of

position size. Your losses will be bigger if you place stops with a margin of error and the stop ends up being activated nevertheless. As a result, you may need to reduce the size of your position to reduce the impact on your margin.

Using technical or financial levels to place stop-loss orders

When it comes to deciding where to issue stop-loss orders, there are generally two schools of thought:

Technical stops: Using technical analysis to determine where a stop-loss order should be placed. Whatever technical strategy you take, you'll be searching for critical technical points that, if exceeded, will invalidate the trade setup and signal that it's time to exit.

Financial stops: These are based on how much money you're willing to risk on a

certain trade. You may be trading based on a fundamental outlook on future events, but you're only willing or able to risk a specific amount of money.

Financial stops may appeal to ultra-conservative traders who don't want to risk more than a predetermined sum on any given trade. If that's how you keep your trade discipline, go ahead and do it. However, we believe it is critical to emphasize that financial stops are essentially arbitrary and unrelated to the market. They're considerably more a function of position size and entry price — both of which you can influence — than any objective market metric.

Technical stops, on the other hand, are based on historical price action, which is about the only reliable method of predicting future price moves available to traders. If, for example, GBP/USD has consistently failed to trade above 1.6215 in recent weeks, a rise

over that level indicates that something has changed. And the market has determined that GBP/USD should rise in its great wisdom. We have no means of knowing whether or not the break will last; we can only rely on our best guesses.

Our preference is to place orders based on technical levels rather than financial concerns, but the amount of money at risk is the ultimate limiting factor. That may sound as though we're attempting to have it both ways; nevertheless, we'll expand on this concept in the next section.

PUTTING RISK MANAGEMENT TO WORK IN THE TRADING INDUSTRY

Risk management is typically an afterthought when it comes to trading – that is, until you suffer an unexpected loss. Suddenly, the wisdom of the centuries descends upon you, and you swear to yourself that this will never happen again.

By the way, who in their right mind would ever engage in a deal with the intention of

losing money? Isn't that insane? However, every expert trader we know calculates the risk involved in each trade before entering it. It's ingrained in their decision-making DNA, and it influences which trade possibilities they explore and which they pass up.

We strongly advise traders to approach the FX market with risk management foremost in mind. It's how you'll be able to lose money on some trades while still surviving to make money on others determining position size by analyzing the trade setup

The development of a well-thought-out trading plan is the beginning point for any successful trade. The size of the position that will be traded is the most crucial aspect of a trading plan. The size of the position will decide how much money is at stake in the end, as well as the trade's overall feasibility.

However, position size is only half of the

issue when it comes to determining how much money is at stake. The pip gap between the entry price and the stop-loss level is the second half of the calculation. You could be thinking to yourself, "Wait a minute." Why didn't we disclose the potential for profit or the pip difference between the entry and take profit prices? Why aren't we calculating the profit potential of the trade?

Save your rose-colored glasses for when you go out to buy lotto tickets. It's fine to concentrate solely on the positive aspects of the game and fantasize about earning millions when you're betting a dollar or two. When trading in any financial market, however, you must keep in mind that the market is not there to give you money.

We understand that you aren't interested in forex trading since you are afraid of losing money. You want to make money and are willing to take some chances in order to

accomplish so. The question is how much risk you're willing to take. You have a distinct limiting element in your trading since you're working with finite resources in your trading — the quantity of risk capital you've allocated to your trade. You're done once you've depleted your trading capital. As a result, the focus of a risk-aware trading strategy must begin with the downside risks.

That takes us to the trade setup, which we go over in more depth in the next section.

A trade setup is a trading opportunity that you've spotted through fundamental, technical, or a combination of both study.

You must identify the price point where the trade setup is invalidated — where the trade is incorrect — in every trade arrangement. For instance, if you want to learn how to

If you sell a currency pair based on trend-line resistance, price advances beyond the trend

line will invalidate your reasoning for being short. As a result, the price level of the trend line is the overall strategy's line in the sand.

The trade's starting point has arrived. Let's say current market prices are 50 pips below your identified trend-line resistance. That means the market could move higher by 50 pips while your trade setup remains valid, but you'll be 50 pips out of the money. You now have a clear picture of how much risk your trade setup requires you to take. You're risking at least 50 pips if you enter now.

Alternatively, you might lower your risk by waiting and using an order to sell at a higher level, say 25 pips higher. If the market cooperates and your limit-entry order is filled, your trade setup is now only 25 pips away from being invalidated.

So, how big of a position should you take in

this trade? From a risk perspective, it all comes down to where you can enter the trade in relation to your stop-out level (see the following section).

Calculating the risk in terms of money

You can evaluate the level of risk provided by a trade once you've determined where your stop-loss point is — where the trade setup is negated — and where you're able to enter. Let's imagine you're tempted to enter the position at present market levels with a 50-pip stop loss. If you're trading a standard-size account (100,000 lots) and the trade is in NZD/USD (where profit and loss are calculated in USD), each lot would be worth $500 (100,000 0.0050 NZD/USD pips = $500).

If you have a $10,000 margin balance, you're risking 5% of your trading capital per lot in

this deal, which is commonly quoted as the maximum risk in any one trade.

Although there are no hard and fast rules for how much you should risk in any given trade, we recommend that you keep your risk to no more than 10% of your account amount.

If you can enter the trade at a better level (for example, by putting an order to sell 25 pips higher), you'll only be risking 25 pips on the deal. You may double the position size while putting the same amount of money at risk. Alternatively, you might stick to a single lot and reduce your risk by half.

Creating a risk-adjusted trading strategy

The risk in a trading plan isn't only about losing money on a deal. There are additional risks associated with trade setups that you are

unable to enter. Another classic market adage states that some of the best transactions are the most difficult to enter. You might be considering a trade where you purchase a drop around suspected buying orders or substantial technical support. But what if the downturn never materializes?

Identifying the places of entry into the trade

It's tough to win or lose on a trade if you never get into the position in the first place, which is why determining where to enter the trade is one of the most crucial elements in any trading strategy.

When it comes to determining entry levels, we like to employ technical analysis. We concentrate on the following technical levels while looking for entry points:

Various time frames of trend lines (daily, four-hour, and hourly)

Hourly highs and lows for intraday short-term positions

Highs and lows for medium- to long-term holdings on a daily basis

Zones of congestion

Fibonacci retracements are price retracements calculated using the Fibonacci formula (38.2 percent, 50 per- cent, 61.8 percent, and 76.4 percent)

Highs and lows on the rise

Double-check the level after you've decided on a price point for the trade. Is the entry-level position feasible? Is your entry point likely to be reached in a short-term time frame (minutes to hours) if you're wanting to enter a short-term trade? You can utilize momentum readings to predict whether or not an order level will be attained. If hourly momentum readings are trending lower, for example, a buy entry to the downside is more

likely to be attained than a sell entry above.

What happens if you never get to your entry level? Do you have a contingency plan in place? Is there a price level below which you would sell if you were intending on selling on additional rallies, but the market falls directly lower?consider selling on the basis of a stop-loss order? What does that backup strategy entail in terms of your overall trade stop level? Should the position size be reduced to compensate for the lower input rate?

USING FORESIGHT TO SET STOP LOSSES

From the standpoint of overall risk, the stop-loss level is the beginning point in any trade plan. It's when the trade setup is invalidated and the approach fails.

When deciding on a stop level, keep in mind that the currency market, like most financial markets, has a tendency to try to take out levels where stop losses are most likely to be found. Nothing is more frustrating than having the best approach but being caught off guard by a short-term, stop-loss-driven price

move that finally reverses and moves in the other direction of your forecast.

To avoid being needlessly whipsawed out of a position, choose your stop-loss level from a defensive standpoint point of view Expect the market to test the level where the trade setting is invalidated, such as trend-line support or hourly lows, before moving on. Then consider how far the market must go before it is truly considered a break if it tests that level.

Although there is no established formula for this computation, allowing for a margin of error might occasionally prevent an erroneously triggered stop loss. The margin of error you use will be determined by both the general volatility of the currency pair you're trading and the overall market volatility at the time of the deal.

Above all, you must weigh the risk of being

duped into making a bad decision against the greater risk that your whole plan is flawed. You can be flexible up to a point, but you must still set and keep to your ultimate stop loss.

Dynamically setting take-profit targets

When it comes to determining the take-profit target, many trading manuals recommend employing a risk/reward ratio of 2:1 (meaning that if you're willing to risk 50 points on a trade, you should try to make 100 points). In theory, that method is sound, but it fails to take into account the market's realities. Why should the market "reward" you with twice as much profit just because you spotted a trade opportunity with x amount of risk?

Instead, we recommend taking a more dynamic market-based approach that takes into account where the market is likely to go based on where it has been (technical analysis) and overall market conditions. The

idea is to be realistic about how much money you can get out of the market rather than idealistic about how much money you can get out of the market.

As the key guideposts in the progression of market moves, we concentrate on technical support and resistance levels. If you're trying to buy based on a Fibonacci retracement level as support, for example, your take-profit objectives will be the technical resistance levels above. Price targets that are somewhat predictable and feasible are also suggested by chart formations such as channels and flags.

As gauges of the underlying pace of the market movement, we look to momentum indicators like Moving Average Convergence/Divergence (MACD) and stochastics. Stay with the trade if short-term momentum is accelerating in your favor, and consider modifying your take-profit targets to catch a larger move. Consider lowering your

profit objectives and taking a more defensive, profit-protecting position, such as raising your stop loss or taking partial profit, if short-term momentum in the direction of the trade is slowing or halting.

Another factor to consider while dynamically adjusting your profit goals is time. You must be aware of impending events and market conditions and be able to predict them. What's likely to happen as European markets begin to close up for the day if you've been long for a rally during the North American morning? What can you expect in the interim if you're trading USD/JPY in the New York afternoon and Japanese industrial production is due out in a few hours? Continue to be adaptable and dynamic, just like the market.

Selecting a Trading Broker

As online currency trading has grown in popularity over the last several years, dozens

of forex brokerage firms have sprung up all over the world. The competition among brokerages is severe, and there is no shortage of advertising aimed at gaining your business. We'll look at some of the risk differences across forex brokerages in this part, because where you trade might have an impact on your trading results.

We think it's vital to clarify that we're linked with FOREX.com in the interest of full disclosure, in case you skipped the book's introduction. We recommend that you review the Cheat Sheet before selecting a broker because it has a list of questions to ask.

Brokers' various business models

Most online forex brokers act as market makers, which means they are on the opposing side of every deal. When you purchase, you are buying from the broker, and when you sell, you are selling to the broker.

Market-making brokerage firms often provide both consistent liquidity and execution, allowing you to trade the amount you want at any time.

Fixed or variable spreads are frequently offered by market makers:

Fixed spreads are always the same, regardless of what is going on in the market. Fixed spreads are slightly bigger than variable spreads because the broker must take the added market risk of quoting a fixed spread all day (especially in poorly traded or tumultuous markets, when interbank spreads tend to widen).

Variable spreads change in response to market interest. Variable spreads will be the narrowest during very liquid periods, such as the overlap between the London and New York sessions (as low as 1 or 2 pips in EUR/USD and other widely traded currency pairings). Spreads will be wider at slower times (such as 6 p.m. Eastern time [ET],

when New York is closed and Asia is not yet fully operational).

It is mostly dependent on your trading strategy whether you should use fixed or variable spreads. If you're a short-term trader wanting to make a few pips on each trade, variable spreads, which are tightest in liquid markets, are generally the best option. Fixed spreads will help you to avoid the inevitable widening of spreads (sometimes by a large amount) that occurs with fundamental announcements if you trade around news.

The nondealing desk approach is another model that a few brokers are promoting. The phrase is intended to distinguish these brokers from market-making brokers, who handle the firm's market exposure through trading, or dealing, desks.

Nondealing desk brokers will inform you that the price you're trading on is derived from the interbank market, and that they send all of your trades to the banks directly. But, if that's

the case, why do we need a non-dealing desk broker? Large institutional players were unable to conduct tens of thousands of individual deals, prompting the emergence of online forex brokers.

More importantly, how does the nondealing desk make money if it is commission-free and routes every trade to a bank? A legitimate nondealing desk firm will charge commissions for each trade and offer very tight bid/offer spreads.

The spread between the bid and the offer compensates commission-free forex brokers. When you buy from a broker at 15, for example, and another trader sells to the broker at 14, 13, or 12, the broker makes money on the spread.

The truth of the nondealing-desk method is that during periods of volatility, such trading platforms may offer broader prices and

sharper price gaps, all while claiming no influence over the prices displayed. Be wary of promises of interbank trading; if something sounds too good to be true, it probably is.

BROKERS' FINANCIAL RISKS

The most significant financial risk posed by FX brokerages is the failure of the brokerage firm owing to mismanagement or fraud, as occurred in the case of MF Global in 2011. Your trading account could be blocked and your funds could be trapped in bankruptcy proceedings for months or lost permanently if a brokerage goes bankrupt.

To mitigate this risk, ensure that your broker is registered with the proper financial authorities in the jurisdiction in which it works. In the United States, forex brokers

must register with the Commodity Futures Trading Commission (CFTC) as a Futures Commission Merchant/Retail Foreign Exchange Dealer (FCM/RFED) and are eventually subject to regulation according to the CFTC's rules and regulations Similar to FINRA (previously known as NASD, or the National Association of Securities Dealers), which regulates stock brokers regulated by the Securities and Exchange Commission, the National Futures Association (NFA) is a self-regulatory group for forex brokers (SEC).

The NFA's website can be found at www.nfa.futures.org. Check the regulatory status of a potential broker at HYPERLINK "http://www.nfa.futures.org/." You should also look at the broker-age firm's regulatory background and financial health. Choose companies with a proven track record and good financials.

Contingency Planning and Technology Issues

Online currency trading brings with it a slew of potential technological issues for which you must be prepared. In the previous part, we discussed the main technology concerns arising from the broker's side, but there are lots of things that can go wrong on your end of the connection as well.

Unfortunately, this is the catch-22 of current technology: without it, you wouldn't be able to access the forex market in the first place, but when an issue arises, it's just another example of modern technology complicating your life.

The key is to foresee what might happen and be ready for it when it does. In Chapter 4, we discuss the issues with technology.

The name of the game is contingency planning, and the solution is redundancy. When we talk about redundancy, we're talking about having a backup plan for your backup plan, as well as a backup plan in case the other backup plan fails. Try saying that

three times quickly.

Make sure you can call your brokerage's trading desk if your Internet connection is down; know its phone number as well as any account numbers or passwords you'll need to authenticate your identity if you need to trade or place orders over the phone.

Above all, make certain to complete the following tasks:

For any open positions, always have a stop-loss order in place. For any and all scenarios, this is your first and best backup plan. Also, make sure your stop-loss order is valid until canceled, so it won't expire while the trade is open.

Make a list of all of your open positions and orders. Keep a printed record of all your transactions and orders in a notepad or trading journal in case of an emergency. You won't be able to see your exposure if you

can't get into your brokerage's trading platform.

PUTTING A TRADING STRATEGY INTO ACTION

eSignal is the source of this information (www.esignal.com)

In a free essay at, learn how to improve your performance using mindful trading.

www.dummies.com/extras/currencytrading.

In this section...

Create your own trading account.

Recognize the trade-off between having a great trading idea and being able to open a position at the optimal price.

Find out how to enter a trade in the most typical ways.

While the trade is active, keep an eye on it.

Find out how to close a trade.

TRIGGERING THE GUN

Taking on new trading positions

Incorporating averaging into trading setups

Breakout trading is a type of trading that occurs when a market moves in a

Dealing with customers and placing orders through the internet

The phrase "you have to be in it to win it" is a popular among currency traders. The phrase "in it" refers to being "in" the market.

An open position (long/short) in a currency pair expresses a right-directional stance.

However, there is always a trade-off between having the best position and getting into it at the best price. Shorting the AUD/USD, for example, may be the right position to take, but if you enter at the wrong price, you may have to suffer through considerable pain before the trade moves your way.

We'll go through some of the numerous ways to initiate trades and set up positions to meet your overall strategy in this chapter.

Taking the First Steps

You can trade in the forex market in one of two ways: you can trade at the market, or the current price, using your broker's platform's click-and-deal option; or you can use orders, such as limit orders and if/then orders.

Then there are orders that are contingent. (Order kinds are discussed in Chapter 4.) However, there's a lot more to it. Some trade settings recommend using both strategies to take a position, while others rely solely on orders to capture rapid or unexpected price swings. Then there's the delicate art of market timing to get in at the greatest possible price.

Investing and selling in today's market

Many traders choose to open a position by trading at the market rather than placing an order that may or may not be filled. They'd rather have the assurance of knowing they're in the market. Trading is also as much fun and stimulating as it is because you are actively buying and selling a lot of effort

The nature of your plan will influence whether you enter now (at the market) or wait for better price levels (using orders). You'll be trading largely at the market if you want to

trade short-term (minutes/hours) on news or economic data reports, for example. You should use orders to execute your market entry if you want to position for a larger price adjustment over the next day(s).

You need a good handle on recent price activity for short-term trade entrance in the market, which entails knowing where prices have been for the prior several hours. You don't have to close your chart window, open your trading platform, and pay the offer just because you've decided to buy USD/CAD.

To get a sense of where prices have been trading recently, take a step back and look at shorter-term charts, such as 5 or 15 minutes. You'll most likely see a rather limited price range, often between 20 and 30 pips. A little patience, unless the case is urgent, can go a long way toward increasing your entry level. Why buy at 1.0550 when you may get a better deal at 1.0535?

Allow price swings to work in your favor by buying on downticks and selling on upticks in accordance with your overall strategy. It helps to choose your trade size ahead of time, so that when the price reaches your chosen level, you only have to click once to complete the transaction. Limit orders can also be used to buy or sell a few pips off the current market, allowing the broker's platform to execute automatically if the price moves are too fast to click and deal manually.

Keep a disciplined entrance price in mind as you follow the market action, both in your favor and in case prices start to move away from your ideal entry level. Stay with your plan and execute the transaction if the market cooperates and goes to your intended trade entry price. Have a worst-case entry level in mind and be ready to pull the trigger if prices move away from you, so you can still execute your overall strategy. You won't always be able to enter for a lower fee, but we believe you'll be surprised how often you can.

Getting into a position via averaging

Averaging into a position is usually beneficial to medium- and long-term trade tactics. The strategy of buying/selling at successively lower/higher prices to enhance the average rate of the intended long/short position is known as averaging into a position. The goal is to let larger market swings play out and then take advantage of them to build a larger position at better prices than present levels in the hopes that the market will eventually reverse course and follow your approach.

To illustrate how it works, look at a thorough example of averaging into a position. Assume the USD/JPY is falling from 82.20 on a weakening dollar.

Despite the release of US economic data, you believe USD/JPY will not fall below 81.00, where the 200-day moving average is placed.

One possible approach is to buy USD/JPY on current weakness, spacing your purchases so that you can buy as low as possible while staying above 81.00, where you don't expect it to move. (In this case, the stop-loss exit would be somewhere below 81.00.) Consider buying one lot of USD/JPY at the market, which is currently at 82.00, merely to have a share of the position in case the market unexpectedly recovers. Because it's a margin of error above the important 81.00 level, you decide that 81.20 is another solid level to purchase at. You'll be long two lots at an average price of 81.60 ([82.00 + 81.20] 2 = 81.60) if your purchase order at 81.20 is filled.

Take a look at what happened there just now. You were long one lot from 82.00 to begin with. Adding to the position at 81.20 meant the market was trading lower, which meant an unrealized loss of 80 pips on your initial position from 82.00. Your unrealized loss

hasn't altered much when you buy the second lot (assuming the market is still at 81.20 and subtracting the spread, you're still out 80 pips, now 40 pips on two lots), but your position size has doubled, which implies your risk has doubled as well.

Your unrealized loss will be minimized if the market recovers from 81.20. However, if the market continues to fall, your losses will be double what they would have been if you hadn't added to your investment. If your plan works and the market reverses higher, you now have a greater position with a lower entry price than if you had entered the two-lot position at higher levels earlier.

In other trading manuals, the practice is referred to as pyramiding, and the advise is usually to avoid it (as in "Don't pyramid into a losing position"). It's sometimes permissible to "add on" to winning positions, such as if a

technical level breaks in your trade's favor. The end product is

Adding to winning positions, on the other hand, results in a lower overall average rate — a higher average long price or a lower average short price. Any gains in the overall transaction can be swiftly wiped if the market reverses after you add on.

So, what really is the situation? Is it better to average your way into positions or not? The answer, like with most trading-tactics inquiries, is simple: "It depends." Consider the following factors when selecting whether or not to average into positions:

Time frame of the trade: Short-term trades aim to profit from the market's immediate trend. If you're already wrong about the direction, adding to the position at a higher rate will almost certainly increase your losses. If the trade setup predicts a market

reversal, averaging into a position can make sense for medium- and longer-term trades. (We go into more detail about this in the section "When averaging into a position makes sense" later in this chapter.)

Account size: Depending on the size of your account, you may not be able to add to positions. You should also bear in mind that adding to a position reduces your available margin, reducing your buffer against price fluctuations and bringing you closer to liquidation due to insufficient margin. If trading lower position sizes, such as 10,000 mini-lots, is the way to go, go for it.

Averaging into transactions is probably not a good idea if the entire market or the currency pair you're dealing is experiencing high volatility. Increased volatility is frequently a sign of market uncertainty or new information, both of which can lead to more dramatic directional price movements, making averaging a losing proposition. Lower volatility circumstances, on the other

hand, tend to favor range-trading environments, where averaging can be beneficial.

Signs that entering a trade with averaging is not a smart idea

With good reason, many trading manuals advise against averaging into or adding to a losing position. On minor incremental price fluctuations, the strategy can result in considerably greater losses. You're also missing out on the current directional move if you're adding to a losing position. In other words, you're not only losing money, but you're also missing out on profits, which is the opportunity cost of averaging.

Even professional traders, however, are still prone to averaging into poor trades. The following are some signs that averaging isn't a good idea:

Your stop-loss level was just blown through by the market. However, because you didn't

place a stop-loss order, you're still holding the losing position. Trading without an active stop-loss order is the first tactical blunder. Second tactical blunder: Instead of quitting the position in accordance with your trade plan, you opt to cling on to the position in the hopes that it would recover. The first wipeout on the slippery slope of trading discipline surrender is frequently this. Spend less money and avoid making a third tactical error by averaging into a larger position (which you had already planned to be out of by that point anyway).

The range has just been broken. You may have experienced recent trading success in a range-bound market, and you're back in a position based on that on that scale However, price ranges do break and prices shift to new highs and lows. Remember the premise for your trade — the range will hold — and don't hold on to, much less add to, positions that are beyond your range-based stop-loss exit level.

The news has been released, but the currency pair has not reacted as expected. Even if the news or data are in favor of the dollar, the currency is under selling pressure. Keep in mind that there are several cross-currents at work in the FX market at any given time. Sometimes they're based on news or information that isn't widely known in the market, such as a mergers-and-acquisitions (M&A) deal or a rumor; other times they're based on news or information that isn't widely known in the market, such as a large hedge fund turning around a multibillion-dollar position.

Keep in mind that the reaction of the market to a news/data announcement is more important than the report itself. If you've taken a position based on the news, don't second-guess the market's reaction by adding to it if it doesn't react the way you expect.

According to the data. Accept that something else is happening and that the news you used to make your trade isn't it.

When is it OK to average into a position?

You may be perfectly justified in averaging into a position depending on the trading setting. In fact, you'll be hoping to be able to average into a position at better rates with some trading possibilities, because if the trade setup is accurate, you'll want to put on as large a position as possible.

Even while we're recommending that certain trading possibilities merit averaging into a position, we want to emphasize that in every trade setup, you must still define the eventual stop-loss exit point. In other words, you can average into a position as much as you want up to a point, but once that number is reached, the trade setup is invalidated, and you must quit the position.

The trade setups we're talking about are ones that predict a reversal. Prices frequently enter counter-trend consolidation ranges, in which prices move in the opposite direction of the dominant trend for a period of time before

returning to the underlying trend. Daily candlestick patterns like a shooting star/hammer or a tweezers top/bottom can indicate an upcoming reversal.

After a big intraday spike reversal/rejection from important technical levels, you can expect a reversal. The market may also be approaching significant long-term trend-line support or resistance, indicating that a medium-term bottom or top is approaching.

The price differential between current market levels and the setup's ideal entry point is something that all of these setups have in common. In the EUR/USD, for example, substantial daily trend-line resistance from the last six months may be seen above at 1.2960/70. Market levels are currently well below 1.2890, with a spike rejection from an intraday test to 1.2930/35. Adding

Based on these findings, we can safely assume that the current market price is

slightly below a major resistance point, indicating that a short position is the best course of action.

However, we have no way of knowing how much higher the market will go, or even if it will, before the expected reverse lower occurs. The market could immediately begin to decline from current levels. It could retest the earlier-in-the-day spike highs, or it could make it all the way to trend-line resistance before stalling. So, where can we go to save costs?

The answer can be found between current market levels and daily trend-line resistance, in the zone of resistance we just highlighted. This is when averaging into a trade to take advantage of the trade setup makes sense.

We may not know how much higher the market will go, therefore we may be willing to short a percentage of the overall position at

current market levels if the peak has already been recognized and prices head directly lower. If the market allows, we may also be willing to sell the remaining portion(s) of the position at successively higher levels it.

If the trend-line resistance level is met, we'll save the last piece of the position.

Be conscious of what your ultimate average rate will be if all of your limit-entry orders are filled when deciding where to leave your limit-entry orders to average into a transaction. The total amount you're risking on the transaction is the difference between that average rate and your stop-loss level multiplied by the total position size. (We look at the profit/loss implications of closing down a multiple lot averaging position.)

Although there are no 100% accurate indicators for predicting how much higher the market will go, we can use short-term momentum studies like stochastic models, the Relative Strength Index (RSI), or Moving

Average Convergence/Divergence (MACD) to make an educated guess as to how much more upside potential there may be.

If hourly momentum studies, for example, have already reached their peak and crossed over to the downside, the upside potential is likely to be restricted. This may support being more aggressive when constructing a short position, such as selling at present market levels and adding further limit orders to sell above at closer levels. However, if hourly momentum studies continue to move upward, we can wait and sell at somewhat higher levels using limit sell orders.

You must be able to buy/sell several lots over rather big price zones, perhaps as much as 100 pips or more, in order to average into a reversal setup. Before you start averaging into your entire position, make sure you have enough margin resources available. You may need to place your limit-entry orders farther apart or trade fewer lots overall depending on the size of the buy/sell zone and your

available margin balance.

It's always a trade-off between being at the right place at the right time and getting in for the best price. It's aggravating to spot a potentially large market reversal and put a single limit-entry order, only to watch the reversal occur without your order being filled. One method to ensure you're on board for at least portion of the move is to start averaging into the position at present pricing.

If the setup works out, you'll be able to take advantage of any positive market price movements, resulting in a higher average rate on your position. If the setup fails, averaging into the position at gradually better rates will cost less than entering the entire position at the current market level in the end.

Breakout trading

A price movement that moves beyond, or breaks out of, recently established trading

ranges or price patterns represented using trend lines is referred to as a breakout or break. Breakouts can happen at any point in time, from weeks and days to hours and minutes. The greater the significance of the breakout in terms of the total predicted price movement, the longer the time horizon.

Prices on a 15-minute chart, for example, may build a trading range of 20 to 30 pips across several hours in the very short term. In a matter of minutes or hours, a breakout on such a short time scale could result in a 30- to 50-pip shift. Breakouts in daily trading ranges of 300 to 400 pips may result in an initial 50- to 150-pip movement in the hours after the breakout, with more to come in the following sessions.

There is no one-size-fits-all ratio or scale for range breakouts; we've only provided samples to illustrate the relative scales involved. To be sure, a 15-minute range breakout can lead to an hourly range

breakout, which can lead to a daily range breakout.

Breakouts are significant because they signal a shift in market sentiment. Most trading theories begin with the assumption that the current price reflects all currently available information on the market. However, rather of settling on a single price and stopping, markets tend to consolidate into a price zone, or range, in which relatively tiny price movements are just noise in terms of larger theories of market price behavior.

When a range is broken, something in the market's thinking had to have changed. And there's only one thing that can make the market think differently: new data. Anything from news and statistics to rumors and remarks, right down to the prices themselves, might be considered fresh information. Many traders use price data as their major source of information when making decisions. If the

price of the USD/CHF has been capped by 1.0500 for the past four weeks, a rise over that level is new information that necessitates market adjustments.

From the standpoint of an individual trader, the beauty of breakouts is that you don't need to know why prices have broken out - just that they have. Of course, being informed of what's going on in the market and what news is driving it helps you anticipate and prepare for future breakouts.

Breakouts are frequently crucial indications to get in or out of positions when it comes to entering a position. In this way, they eliminate much of the guesswork involved in determining where to enter or quit a position.

Identifying potential levels for a breakout

Identifying where breakouts are likely to occur is the first step in trading on a breakout. Drawing trend lines that capture recent high/low price ranges is the easiest way to

pinpoint possible breakout levels. In many cases, these ranges will form a sideways or horizontal price range, with sellers emerging at the same level on the upside and buying stepping in at the same level on the downside. Horizontal ranges are largely useless at predicting which way the break will happen.

Other price ranges, such as flags, pennants, wedges, and triangles, will generate price patterns with sloping trend lines on the top and bottom. These patterns are more capable of predicting the direction of the ultimate break-out as well as the distance of the break-out. (In Chapter 11, we go through the most prevalent patterns and what they mean in greater depth.)

The time frame you're looking at will define the overall magnitude of the breakout and will help you decide whether or not you should trade it. A rupture of a four-hour range or a daily price pattern will have far less

impact than very small time frames (less than an hour). The length of time a pricing range or pattern has been in existence also gives you an indication of its importance. A break of a range that has been in place for less than 48 hours will have less impact on price movements than a breach of a range that has been in place for more than three weeks.

Stop-loss entry orders are used to trade breaks.

You can utilize a resting stop-loss entry order placed just beyond the breakout level to enter into a position if a break occurs after you've identified a possible breakout point. You would leave a stop-loss entry order to purchase at a price slightly above the upper level of the range or pattern to get long for a break to the upside. You would leave a stop-loss entry order to sell at a price slightly below the lower level of the range or pattern to get short for a break down.

Figure 14-1 shows the EUR/USD chart and where stop-loss entry orders for breakout trading could be set.

The advantage of employing stop-loss entry orders is that you can trade the breakout without taking any additional action. In the blink of an eye, a breakout can occur. Just when you thought the highest range level couldn't get much better,

If prices start to wander away from the breakout level, for example, they'll come screaming back and blast right through it.

Graph 14-1:

Stop-loss orders are used to trade a breakout that has been detected with a trend.

lines.

eSignal is the source of this information (www.esignal.com)

Price movements like these can catch even the most seasoned traders off guard, like a deer caught in the headlights. Prices have already jumped considerably beyond their planned entry level by the time they react to the break. Worse, attempting to trade at the market during a fast-moving breakout could result in you missing your price and having to rejoin the transaction, by which time prices may have gone even further in the direction of the break.

Be wary of any upcoming important data or news events while creating a stop-loss entry order to trade a breakout level. If a news event triggers your stop-loss entry order, the order's execution rate may be subject to slippage, thereby reducing the gains from jumping in on the breakout. (Slippage is discussed in Chapter 13.)

Trading a breakthrough level's retest

The other option for trading a breakout is to trade it after it has occurred. You may not have realized the importance of a specific technical level, or you may not have placed orders overnight to take advantage of a gap. You wake up the next morning to find that prices have increased overnight, and you feel like you've missed the boat. However, if prices return to re-test the breakout level, you may still have a chance to trade the breakout.

A retest occurs when prices reverse direction following a break and return to the breakout level to check if it holds. Prices may stagnate following a break to the upside, for example, when the initial wave of purchasing has passed.

Short-term profit-taking selling is triggered. Prices are likely to recover to the breakout level, which should now serve as support and draw buying interest.

These retests can be used to create a position in the direction of the break-out, such as getting long on the pullback in this case. On the retest of the break higher in the AUD/USD, Figure 14-1 illustrates where you may have bought. It's worth noting that prices did not precisely return to the breakout level. Allowing for a margin of error when trying to get in on a retest is a good idea in case the exact level isn't retested. On any pullbacks following a breakout, you might consider employing the averaging into a position approach mentioned earlier in this chapter to construct a position. The average range would be the difference between current prices and the break level in this case.

We have mentioned that you could be able to buy or sell a retest of a breakout level. The reason for this is that not every breakout results in a retest of the break level. Some retests may just retrace a fraction of the breakout move rather than testing the exact break level, which is usually a solid sign that

the break is true and will continue. Other breakouts never look back and continue on their path.

However, to the degree that it is a common enough occurrence, you should be aware of and expect prices to rebound to the breakout level. From a technical standpoint, if prices retest the breakout level and it holds, it's a strong indication that the breakout is real, as market interest is flowing in the direction of the break.

Keeping an eye out for false breaks

Breakouts are a typical occurrence in currency trading, particularly in the short term. However, not every breakthrough is long-lasting. A false break occurs when prices break through important support or resistance levels, then pause and reverse direction, eventually moving back through the break level.

Except in hindsight, there's no way of

knowing whether a given breakout will turn out to be a false break. To guard against false breaks (as well as other issues),

You must also follow up your stop-loss entry with a contingent stop-loss exit order to close out the position if the market reverses course, while preserving trading discipline and appropriate risk management.

Although there is no foolproof technique to discern whether a breakout is a fake break or a legitimate one worth trading, there are a few things to bear in mind:

Time frame of the breakout level: The shorter the time frame you're looking at, the more likely a fake break will occur. Only short-term intraday traders may experience stop losses if a price range on an hourly chart is broken. The break of a daily price range that has been in place for several weeks, on the other hand, is likely to pique the market's interest, especially for systematic models.

The more critical the price level that is broken, the more likely it is to elicit a market reaction and be sustained. Breaking a three-month daily trend line is more probable than breaking recent hourly highs/lows to cause a market reaction.

The longer the breakout level is held, the more likely it is that the breakout will be legitimate. In a couple of minutes, many erroneous breaks are reversed. An hourly close above the break level raises confidence in the breakout, and a daily close above the break level confirms it.

Currency pair volatility: Volatile currency pairs, such as GBP/USD and USD/CHF, are more prone to false breaks than others, particularly in short-term time frames. In larger pairs, such as EUR/USD and USD/JPY, look for confirmation. If they're pressed against equal price levels, the less liquid pairs may be in the lead.

Important news and events: What is the

underlying cause of the breakout? Is it possible that someone said something? Have key market expectations, such as those regarding monetary policy, been disappointed or surprised? Sustained breakouts are usually accompanied with a fundamental catalyst, such as a substantial piece of news that has changed the market's view. It's more likely that the news is a false break if it's little or not fully "new" news.

Trading breakouts is a more aggressive trading method that comes with its own set of hazards. You're probably better off focusing exclusively on breaks of levels identified by trend-line analysis in larger time frames, such as daily charts, or breaks of longer-term price levels, such as daily or weekly highs/lows, until you've gained some expertise in the forex market. They won't happen as frequently, but they'll be more consistent.

MAKING THE CORRECT TRADE

Entering a position is as simple as a few mouse clicks when utilizing an online trading platform. Simultaneously, the ease and speed with which internet trading platforms operate make those easy mouse clicks a done transaction, putting your trading capital at risk.

That's why it's critical to recognize right away that every action you take on a trading platform is entirely your responsibility. You may have meant to click Buy rather than Sell, but only you know for sure.

If you make a mistake, repair it as soon as possible after discovering it. Don't try to get out of it by trading. Do not attempt to control it. Don't begin ratio-nalizing that it might work out in the end. There is no such thing as a perfect trader, and you are destined to make a mistake at some point. Simply cover the mistake and return your position to where you want it to be. One of the few hard-and-fast guidelines we follow while trading any market is to cover errors as soon as possible.

Buying and selling items on the internet

In Chapter 4, we walk you through the basic procedures of conducting an online deal, but in this chapter, we'll focus on some of the human and technical components of online trading.

Click-and-deal trade execution is currently available at almost every online trading firm. Trading on the current market price by hitting the Buy or Sell button on the trading platform is known as click and deal.

Before you may click and deal, you must first do the following:

Choose the appropriate currency pair.

This may seem foolish, but double-check that you've chosen the currency pair in which you wish to trade. If you're not attentive, you could easily confuse EUR/USD with EUR/CHF when the market is busy and you're switching between your charts and the trading interface. When different currency pairs trade at similar price levels, this might also happen. If the EUR/USD pair is trading at 30/33 and the USD/JPY pair is trading at 30/33,

At 31/34, it's all too tempting to focus on the price and ignore the big numbers, which would indicate that you're wearing the wrong pair.

Choose the appropriate exchange amount.

Check to see if you've specified the correct

amount to trade. The trade amount can be entered in a variety of ways depending on the platform. Some have radio buttons, others have scroll-down menus, and yet others let you manually put in the amount. Make sure your selection has been properly logged on the platform while trading is rapid and furious. Some trading platforms allow you to set your default trade sizes in advance, allowing you to simply click and trade on your preferred currency pair.

Make sure your choices are correct.

Remember, this is your money; make sure you're sure now or you'll regret it later. Consider the equities trader at a New York investment bank who intended to sell 10 million shares but made an error in his entry.

a stock, but ended up with a market capitalization of $10 billion. The system had sold several hundred million shares by the time the sale was halted. Ouch!

Select Buy or Sell from the drop-down menu.

Make certain you understand which side of the pricing you want to negotiate on. You must click the greater price — the trading platform's offer — if you want to buy. You must click the lesser price – the platform's bid — if you want to sell. From the user's perspective, most platforms have designated the sides of the pricing, so the bid side will be labeled Sell, and the offer side will be labeled Buy.

The trading platform will confirm whether your trade went through successfully after you click Buy or Sell, usually within a second or less. The platform will provide you a confirmation if your trade request was successful. Make sure your position is what you want it to be by double-checking it.

You'll get a response that says "trade failed," "rates changed," "price not available," or anything similar if the trading price changed before your request was accepted. To make

another trade attempt, you must repeat the steps.

Attempts to trade at the market can fail in particularly fast-moving markets where prices adjust quickly, such as after a data release or the breach of a major technical level or price point. Part of this is due to the latency effect of Internet trading, which refers to the time it takes for the platform price to reach your computer and your trade request to reach the platform's server.

If you're receiving failed trade responses on a regular basis, it could be because of the speed of your Internet connection, which is preventing your trade requests from reaching the brokerage trading platform in a timely manner or delaying the incoming prices you're seeing so they're always behind the real market. Turn to Chapter 4 for more information on how to get the most of your trading on your smartphone or tablet.

You must ensure that you have gotten a

response from the trading platform, regardless of the outcome of your trade request. If you haven't received a response after a few seconds, you should phone your broker right once to confirm the status of your trade request. The transaction may have gone through, but owing to processor delays, confirmations may be delayed. It's also possible that the trade was never received by the trading platform because your computer's Internet connection was lost.

Getting your orders in

In the forex market, orders are essential trading instruments. Consider them trades in the making, because that's exactly what they are. You're in the market if you place an order and subsequent price action causes it to be executed. When placing orders in the market, you must be as diligent as you are thorough, if not more so.

In Chapter 4, we go over the different types of orders and how they're used, and in

Chapter 13, we go over the finer elements of putting orders. Here are a few more helpful hints to remember when placing and managing your orders:

Make sure you've entered your orders accurately. Check that the currency pair, order type, amount, and price are all right. Most trading platforms will reject an order that is clearly incorrect, such as a stop-loss order to buy at a price lower than the current market, and alert you to fix it. Other errors, such as a miscalculated large figure on the order price, can be overlooked and become your responsibility. After the trading platform has accepted your order, double-check it. If it's incorrect, change it or cancel it and start over.

Keep track of when your orders will expire. Order expirations are typically good-'til-cancelled (GTC), in which the order stays active until you cancel it, or good-'til-end-of-

day (EOD), in which the order expires at the conclusion of the trading day (5 p.m. Eastern time [ET]). If you had an intraday position with an EOD stop-loss and later decided to keep the position overnight, you'd have to change the expiration date. On some trading platforms, GTC orders will expire after a certain amount of time, such as 90 days, so be sure you understand your broker's rules.

Cancel any orders that you don't want. Orders can be associated with a position on some trading platforms, which means the order will remain valid as long as the position is open. If you increase or decrease the corresponding position, such position orders will normally modify the order amount. Other orders are separate from positions, therefore they will continue to be active even if your position is closed. Make sure you understand the differences between the two types, and remember to cancel any separate orders, such as take profits, stop losses, or OCO, if you close the position on which they were based.

MANAGING THE TRADE

Keeping up with the latest pricing and news

Observing what other markets have to say

Over time, the trade plan will be updated.

Profits are being protected and gains are being extended.

You've pulled the trigger and opened the trade, and you're now in the market. Isn't it time to relax and let the market do its thing? Not

So quick, amigo. The forex market isn't like a

roulette wheel, where you place your bets, wait for the wheel to spin, and then accept the outcome. It's a fast-paced, fluid environment where new information and pricing changes open up new possibilities and change expectations. It's just as vital to actively manage a trade once you're in it as it is to make the decisions that led to the position being established in the first place.

We hope you'll remember our advice about always trading with a plan, which includes determining where to enter and exit each trade ahead of time, both on a stop-loss and take-profit basis. (In Chapters 10, 12, and 13, we go over how to develop trading strategy in greater depth.) Bottom line: Thoroughly planning each trade before getting caught up in the market's emotions and commotion improves your overall odds of trading success (while minimizing the hazards involved).

When managing an open position, you'll have more or less to accomplish depending on

your trading strategy (short term versus medium to long term) and overall market conditions (range-bound versus trending). You might opt to stick with the “set it and forget it” trade plan you've devised if you're following a medium- to long-term strategy with generally wider stop-loss and take-profit criteria. But, even for longer-term trades, a lot may happen between the time you open a trade and prices hitting one of your order levels, so staying on top of the market is still a smart idea.

Shorter-term trading methods that seek to capture intraday and even smaller price changes must make more frequent adjustments to overall trade strategy. We say "necessarily" because short-term price changes can be both quick and fleeting. If the goal of your trading strategy is to make a profit,

You'll need to be more proactive in guarding against short-term reversals of 15 to 25 pips,

which account for nearly half of your expected upside. If you only capture smaller price shifts — say, on the order of 30 to 50 pips — you'll need to be more proactive in guarding against short-term reversals of 15 to 25 pips, which account for nearly half of your expected upside.

Furthermore, short-term price movements constitute market noise that obscures broader price changes. There will be far more moves of 30 to 50 points than moves of 100 to 200 points. You'll have to be more fluid when it comes to reacting to incoming news and price changes if you're going after the more frequent fluctuations.

While your trade is active, keep an eye on the market.

It pays to stay up with market news and price changes while your trade is live, regardless of the trading strategy you choose. Unexpected market news that affects your position could

arrive at any time. News is news, and you couldn't possibly account for it in your trading plan, thus new information may necessitate changes to your trading strategy.

Any trading strategy begins with selecting how much you're willing to risk, which is determined by the size of the position and the pip distance to the stop-loss mark. When we talk about changing the trading strategy, we're simply talking about lowering the overall risk of the trade by taking profit (full or partial) or shifting the stop loss in the trade's direction. The idea is to be fluid and dynamic in only one direction: profit and risk reduction. Keep your final stop-out point where you decided it should be before entering the transaction, when your emotions were not at play.

With rate alerts, you can keep track of the market.

Setting rate alerts from your charting system or trading platform is one way to keep an eye on the market from afar. A rate alert is an electronic message that notifies you when the market in a currency pair you select touches a price you define. Rate notifications are a fantastic method to stay on top of the market's movements.

Rate notifications on charting systems often only notify you of price changes when you're logged in to your computer or using the charting service on your smartphone or tablet. You can use charting systems at work since they allow you to focus on other projects on your computer while keeping the charting system minimized or in the background. If the market hits your requested price level, the chart system will normally start beeping or flashing and display a pop-up alert.

Some forex brokers, such as FOREX.com, can send rate notifications to your

smartphone by email and text message. Many brokers now have a strong presence on social media sites like Twitter and Facebook, so it's worth following your broker there as well.

Rate alerts are a useful tool to monitor the market from afar, but they should never be used in place of live orders or stop-loss orders. Prices may have moved way beyond your targeted stop-out level by the time you respond to a rate alert and log on to the trading platform or phone your broker's trading desk, leaving you with a higher loss than you anticipated. Rate notifications are a lovely little bonus service, but only orders indicate your broker's duties to take a market action for your account.

Staying on the lookout for new information and data

Before a position is opened, every trade strategy must consider anticipated news and data occurrences. Ideally, you should be

aware of all data reports and events slated to occur throughout your trade strategy's projected time horizon. You should also have a clear awareness of what the market expects in terms of event outcomes and be able to predict how the market will react.

Find out what the Fed chair has recently said about the economic or the monetary policy forecast, for example, if she is due to speak about the economy or the monetary policy outlook. Is she leaning hawkish or dovish right now? If it's an economic data release, make sure you know what's in the report and what it means for market expectations right now. At the very least, make sure you know what the report's consensus expectations are and what the data series has recently indicated.

The market's reaction to news and data is often stated to be more essential than the news or data itself. However, you can't fully analyze the market's reaction unless you first understand what the news means. (For a

deeper look at economic reports, see Chapter 7, and for a look at significant fundamental forces and how the market perceives them, see Chapters 5 and 6.)

The fact that many trade techniques are based on fundamental data and patterns is another reason to keep tuned for news while your trade is ongoing. If your trading strategy is based on certain data or event forecasts, keep an eye out for upcoming reports on such topics.

For example, part of your decision to short EUR/USD could be based on the belief that Eurozone inflation pressures are easing, implying lower Eurozone interest rates ahead. If the next day's Eurozone consumer price index (CPI) news supports your point of view, the underlying basis for sticking with the plan is strengthened. You can then decide whether or not to boost your budget.

Depending on the market's reaction, set a take-profit goal. Similarly, if the CPI data is unusually high, the fundamental basis for your trade is severely weakened, and it serves as a signal to leave the trade sooner than planned. It's pointless to fight until the final end if your trade argument has already been disproved. In light of the new information, you might even reconsider your opinion.

It's absolutely acceptable to speculate based on projected event or data outcomes. It only becomes a problem if you keep trading even when the data/event outcome differs from your expectations and plan. Always connect fresh information and data to the initial purpose for your transaction, and be ready to adjust your trade strategy as needed.

Other financial markets are being monitored.

Other main financial markets, such as equities, bonds, and commodities, coexist with forex markets. Although long-term correlations between these financial markets

and forex have increased in recent years, short-term correlations are significantly less trustworthy.

Other markets and currencies, particularly the US dollar, continue to have crucial basic and psychological links. In this regard, we examine events in other financial markets to see if they confirm or contradict price movements in the dollar pairings. Even if there isn't a statistically reliable basis for trading currencies based on changes in other financial markets, keeping a watch on the following other markets will put you ahead of the game.

Treasury yields in the United States

Government bond yields in the United States are an excellent indicator of the general trajectory of the economy.

Interest rates and expectations in the United States. The major interest rate to keep an eye

on is the benchmark ten-year Treasury note yield. Shorter-term rates, such as three-month T-bills and two-year notes, are also monitored. Rising rates are generally favorable for the dollar, while falling yields are generally negative. If yields are rising but the dollar isn't, it means that other forces are at work to keep the dollar low, and dollar bulls should be wary. If yields are falling and the dollar is falling, the bond market is confirming a negative US dollar situation, which means lower interest rates.

Make sure you understand why bond yields fluctuate, as this might lead to a variety of interpretations. It's more likely to reflect overall dollar movement if it's based on interest rate predictions — as a result of data or Fed comments, for example. If the impact on the market is due to market uncertainty and a flight to quality — for example, due to European debt concerns — the impact on the market will be minimal.

The outlook for the US dollar appears to be improving. The more significant the change in yields, the more crucial the message from the bond market. Changes in yield of more than 5 basis points (1/100 of a percent) should be taken seriously.

Prices of gold and silver

In times of financial market volatility, precious metals such as gold and silver are commonly seen as inflation hedges and safe-haven assets. Gold and silver have witnessed increased demand in recent years as alternatives to major currencies, most notably the US dollar, but also the euro, as the single currency has been threatened by the European financial crisis. As a result, gold and silver prices generally move in the opposite direction of the US dollar (inverse correlation), but short-term correlations are more difficult to predict.

Although gold and silver are very illiquid

markets that primarily follow the larger FX market, the metals are not immune to their own market-specific gyrations, which are often based on technical level breaks.

In gold and silver prices, look for confirmation of the US dollar's path. When the dollar rises and the metals decline, for example, it's a solid sign that the currency's gains are genuine. When the dollar rises and gold remains stable or even rises, the dollar's strength is called into question.

Oil

Oil, like precious metals and other commodities, has a long-term inverse relationship with the United States dollar (dollar down, oil up, and vice versa). However, the same caveat applies: shorter-term correlations are less accurate, and oil is particularly susceptible to supply/demand shocks. The link between oil and the US

currency also has an unbalanced bias, as we can see. If all else is equal, this indicates that oil is more likely to strengthen against a dropping dollar than against a rising dollar.

Oil price movements are also interesting to watch for clues on interest rate forecasts and relative economic growth. Inflationary pressures are exacerbated by increasing oil costs, which may lead to higher interest rates. Higher oil costs, on the other hand, tend to stifle economic growth by undermining consumer consumption. Because of the quickness with which consumers react to changes in oil prices, oil has a greater impact on the growth prospects than the other two. Changes in interest rates take longer. Oil is increasingly serving as a barometer for total global growth as a result of the recent spike in emerging market nation growth.

Stocks

There is relatively little link between stock markets and currencies over long periods of time, such as the recent decade. However, since the Great Financial Crisis of 2008–2009, equities and FX, particularly the US dollar, have had a greater link. The relationship is best stated as risk on/risk off (for more on risk sentiment, see Chapter 5), with stocks being considered as risk-seeking assets and the dollar being viewed as a safe-haven asset, with investors buying USD to buy U.S. Treasury paper, the ultimate safe haven. The risk-on/risk-off situation has often played out as follows in previous years: When the overall market climate is favorable, investors are willing to take risks.

Buying stocks reduces demand for dollars, resulting in currency weakness. When the news has been bad, however, investors have raced to the protection of US Treasuries and the greenback. This link appears to be set as long as the world economy is plagued by recent financial difficulties.

However, as economic and financial conditions return to some semblance of normalcy, we should expect the stock/forex relationship to revert to lower historical correlations.

As Time Passes, Make Changes to Your Trade Plan

If you're like most traders, you're acutely aware of every single pip shift in pricing when you establish a position, at least as long as you're following the market. Every small price shift, and the resulting change in your unrealized profit,

Profit and loss (P&L) is a term that inspires a wide range of emotions, from joy to sorrow, and everything in between. This is to be expected. After all, it's the P&L that matters at the end of the day, and pips are how that's assessed.

The passage of time, on the other hand, is an aspect of trading that receives surprisingly little attention from traders, at least on a conscious level. Prices may appear to stay stationary for long periods of time, such as when a currency pair is trapped in a range (i.e., it keeps trading back and forth over the same terrain), yet time is always moving forward.

Traders must develop the ability to keep track of time and how it passes. You already know where the market price is now, therefore the actual question is: where will it be in the future? When you ponder about the future, it becomes a matter of time: When will it arrive? You'll go a long way toward incorporating time into your overall trade preparation if you think about these questions when you develop each trade strategy. More importantly, you'll develop an instinctive understanding of the value of time in trading, and you'll find yourself wondering when as much as why or where.

On a more physical level, as time passes, routine everyday events such as option expirations and daily fixes, to name a few, become more common.

These are precise times when traders might reasonably expect a surge of activity, however this does not always happen. (In Chapter 2, we go over the succession of typical trading-day time events.)

The passage of time also gets you closer to upcoming news or data occurrences. Market expectations for important events are priced in in the hours and days leading up to the event or data release. As the release date approaches, anticipative speculation tends to decrease, and price fluctuations can become more chaotic as traders take to the sidelines.

Prices may continue to fluctuate, but they will not move. All of these market reactions are as much a function of time as of the event itself.

On a more objective level, as time passes, it

can add to or subtract from the significance of price moves that have already occurred, frequently resulting in trade signals. Take, for example, the failure of

If prices fall below a break of trend-line support on an hourly basis, it's likely to be a false break and prices will recover higher. However, if the break happened at 10:12 ET, you won't know until the next hourly close, which is in 48 minutes. Longer time periods can offer potentially more significant trading signals, such as a daily close above long-term trend-line resistance or a prior daily high.

The trend lines change over time

If you base your trading techniques on trend-line analysis, keep in mind that price levels determined from trend lines will alter based on the trend line's slope. The angle of a trend line compared to a horizontal line is referred to as its slope. The steeper the trend line's slope, the more the relevant price level will

fluctuate over time; the shallower the slope, the more gradually price levels will change over time.

Figure 15-1 depicts how short-term price levels based on a 15-minute trend line will fluctuate over the course of a few hours. Take note of how steeply the ascending trend line slopes. Prices must stay above the trend line as it increases over time if they are to continue moving higher in line with it, implying price gains of 10 to 15 pips every hour.

Figure 15-1: The slope of a trend line can cause its values to alter over time.

eSignal is the source of this information (www.esignal.com)

You can fairly precisely specify where prices must be in the future for the trend line to stay active as a support/ resistance level using

your charting system. To do so, move the cursor down the trend line and record the time that displays on the chart's horizontal axis at the bottom.

Longer-term charts are similar, but the price shifts are often less dramatic, thus an hourly trend line may see levels shift by 10 to 15 pips every 6 to 12 hours, and daily charts may see levels shift by 10 to 30 pips over many days. However, there are no hard and fast rules; it all relies on the slope of the trend line.

If trend lines are part of your trade plan, take into account their altering levels no matter what time frame you're trading. It's possible that you'll need to change your order levels as a result. Take a look at the following examples:

Consider where trend-line support or resistance will be in the following 6 to 12 hours, while your trade is still open but you

may not be able to actively watch the market. A trailing stop can be used as a proxy for changes in trend-line-based support and resistance levels.

Limit-entry orders: If your limit buying/selling order is based on a sloping trend line, alter your order frequently to keep it in play as the trend line moves. If the trend line is ultimately struck, you may miss a trade entry, but the trend line's level has drifted away from where you initially placed the order.

Breakouts: A big trend line that appears to be a mile away one week may suddenly be within striking distance the next week or two, dramatically changing the market's picture. Alternatively, the market may be looking for a breakout trigger in the form of a price high/low, when a sloping trend line striking that high/low might be the spark for a breakout.

Impending occurrences may need changes to your trading strategy.

We highly advise you to look forward as you create your trading strategy to see what data and events are scheduled for the duration of the transaction. If you follow that straightforward suggestion, the odds of your trade plan being disrupted by fairly predicted occurrences are much reduced. More importantly, you'll be able to predict possible price shift triggers, giving you a better understanding of future price fluctuations. If you're forewarned, you're forearmed.

If you've established a trading strategy based on an imminent event — say, a negative U.S. data report — and the market has cooperated and priced in a lower U.S. dollar before the report is issued, you may be looking at a lucrative position even before the data is announced. As the release date approaches, you may want to consider taking a profit and hanging on to the remaining portion of your

stock.

Consider the outcomes that may occur. If the data is negative for the candidate,

You're still in the partial position to profit from more dollar decline if the market reacts by selling the currency. But what if the evidence is more positive than anticipated? What if the data is bad, as predicted, but the market profits from short-dollar bets taken ahead of time in a "sell-the-rumor/buy-the-fact" reaction? You've safeguarded before the event occurred, you made a profit and took some money out of the market. That is what it means to "play the market."

We purposefully depicted a short trade in the above example to remind you that being short is just as frequent in currency trading as being long. "Buy the rumor, sell the fact" is a phrase you may be more acquainted with. We just wanted to make sure you were aware that

it works in both directions.

The market typically slips into a sideways holding pattern before important data and events. The event speculators have all taken their positions, and the rest of the market is watching the data to see how it will respond.

Depending on the upcoming event, these holding patterns might form hours or days in advance. Be prepared for these doldrums, especially if you're trading on a short-term basis, and assess if it's worth it to ride through them.

Order Levels are being updated as prices rise.

Just because you have a well-thought-out trade strategy doesn't mean it needs to be written in stone. At the very least, the last stop-loss departure should be set in stone.

However, after you've established a position and the market is going in your favor, it's critical to be flexible in revising take-profit targets and updating stop-loss orders in order to safeguard your earnings.

Modifying your take-profit goals without simultaneously adjusting your stop-loss order in the same direction is the key to being flexible in this respect. If you're long and want to increase your take profit, you should also increase your stop loss. If you're short and decrease your take profit, you should also lower your stop-loss order.

TARGETS FOR TAKE-PROFIT GROWTH ARE BEING RAISED

Why would you modify your take-profit aim now that you're in the trade? You've constructed a well-formed trading plan ahead of time, as we've suggested, so why would you change it now that you're in the trade? That's a great question, and you should prepare an excellent response, because we've already extolled the benefits of not messing with a trading plan once it's been opened.

So, what exactly qualifies as a compelling

cause to raise your take-profit target? Keep an eye out for the following events to see if you should consider raising your take-profit goals:

Important new information: The fresh knowledge will very certainly have to come from nowhere. If it had been a planned event, such as a data release or a speech, the market speculation surrounding it would have absorbed all of the attention and diminished its impact. Major implies that it must come from the highest levels of decision-making, such as the Fed chairman, the president of the European Central Bank (ECB), or other central bank presidents; the US Treasury secretary; or, increasingly, China. Interest rate hikes or policy adjustments are always possibilities. The more at odds the information is with existing market expectations, the more likely it is to cause a significant price change.

Reduced liquidity: Because fewer market

players are present to absorb price shocks, reduced liquidity circumstances might induce more extensive price swings than would otherwise occur. National holidays, seasonal seasons (late summer, Christmas/New Year's), end of month, end of quarter, and particular Fridays are all times when liquidity is at its lowest.

Breaks of important technical levels: Trend lines that have been in place for months or years, Fibonacci retracement levels of big recent direction- ional moves, and recent extreme highs and lows are all likely to cause larger-than-normal price changes.

The currency pair you're trading: The more illiquid and volatile the currency pair you're trading, the more likely an extreme shift will occur. The main currencies GBP and JPY are the most prominent offenders, although commodity currencies (AUD, CAD, NZD, and ZAR) are also suspects.

As you can see, the list is rather small, and there may only be a dozen or so occurrences in a year that need you to adjust your trading strategy. Avoid getting caught up in the day-to-day commotion and expanding your profit objectives on a regular basis; this will weaken your trading discipline and the foundation of your trade plan.

Stop-loss orders are being tightened to safeguard profits.

Unless there are compelling reasons (see the prior section) or we're utilizing a trailing stop loss, we're hesitant to prolong our take-profit targets. When it comes to profit protection, though, we're considerably more at ease with modifying stop losses to lock in gains. When you've made a profit in the market, it's always a good idea to secure it.

Always examine what price levels must be surpassed to justify changing your stop loss while designing your overall trade plan. If

anything like this happens in the market, you'll be prepared and know what to do.

We prefer to pay attention to hourly and daily trend-line levels, as well as highs/lows and Fibonacci retracement level breaches. When these technical support/resistance levels are breached, it means the market has decided to move prices to a new level in the trade's general direction. Consider changing your stop-loss order to levels close within the broken technical level if this happens.

If the market decides not to maintain the break, your modified stop will automatically exit the trade.

Assume you're long GBP/USD at 1.5250, your original stop loss is at 1.5180 below, and your take-profit target is at 1.5380 above. Above there, at 1.5335, is resistance from yesterday's high. If that level is breached, try adjusting your stop loss to at least break even (1.5250, where you entered). To preserve

profits even more aggressively, move the stop to 1.5315 or 1.5325, locking in a minimum of 65 to 75 pips, on the assumption that 1.5335 will now operate as support.

If you change your stops too aggressively, the market may return to test the break level (1.5335 in this case), triggering your modified stop loss if it's too near, and then continue to make further gains. However, in such circumstance, the trade-off is between something and more of it, or maybe nothing and more of nothing. We'd rather have a tangible result for our efforts.

A trailing stop-loss order is another technique to lock in profits in a more dynamic manner (see Chapter 4). You may try establishing a trailing stop to replace your set stop-loss order once a technical level in the direction of your trade is overcome, similar to the prior example. Set the trailing distance distance to account for the distance between the present market and the opposite side of the technical break level, with a margin of error in case the

break level is retested.

CLOSING THE POSITION AND ASSESSING YOUR PERFORMANCE

Bringing transactions to a close in order to maximize profits

Taking gains and putting a halt to losses

Exiting deals at the correct price and at the appropriate time

Examining your trading results in order to

enhance your performance

Choosing how and when to close out an open currency position is one of the last phases in any currency strategy, but it's also one of the most important.

one of the most crucial No other aspect of a trading technique, in our view, has the capacity to elicit more sentiments of self-recrimination among traders.

“Coulda, woulda, shoulda” is a traditional trader's lament. And there's no better time to feel that way than when a transaction is closed out, since that's when the profit or loss is recorded, and you're dealing with real money.

"Coulda, woulda, shoulda" refers to market measures you could have performed but

didn't for whatever reason. It captures after-the-fact ideas like "I could've took profit while it was testing" after abandoning a trade.

"I should've remained in longer for the big move," "I would've cut my losses sooner if I'd known it was going to keep continuing," or "I should've cut my losses sooner if I'd known it was going to keep going." The trick is to realize ahead of time that you'll never know with 100 percent confidence how your current activities will turn out in the future. You make more decisions in an hour or a day in currency trading than most people do in a month, and that's half the fun!

When it comes to having a good trading mentality, you must recognize that you will not always be correct, so why should you punish yourself when a trade fails? The answer is no, unless you neglected to prepare and monitor your deals actively. You have every cause to blame yourself if you didn't do it.

If you ever find yourself thinking "coulda, woulda, shoulda" — and everyone does - consider why you didn't do something instead of what you didn't do. This chapter discusses some of the most important factors to consider when closing a position.

Bringing the Trade to a Close

You're well ahead of the majority of the market if you've adopted the principle of always trading with a strategy, which we hope you have. The first step to actively trading in the currency market is to develop a detailed trading strategy (trade size; entry levels; and exit levels, both stop-loss and take-profit) when you have a clear mind (no open market risk and its accompanying emotional distractions).

Taking a profit and exiting the trade

Every deal, at its most basic level, results in either a profit or a loss. Sure, some deals end flat, meaning you exit the trade at the same price you started it at, with no profit or loss. The majority of the time, though, you'll be dealing with either the misery of getting stopped out or the exhilaration of profiting.

Profiting too early or not at all

For most traders, taking profit is a rewarding experience. However, if the market continues to move in your trade's favor after you've squared up and taken profit, you may feel as if you're missing out or even losing money. Traders may start to worry that they've grabbed profits too quickly at this point. The emotional component may become quite powerful, and previous trading experience can begin to impact your current thinking. The alternative is frequently not taking any profit at all, leaving you vulnerable to continued market risk.

Remember that you took profit based on your trade strategy, whether it was based on a technical level being achieved or an event occurring. You saw a trading opportunity and took it, so take pride in the fact that you now have something to show for it. Also, don't be a glutton for punishment. No trader ever captures 100 percent of any price movement, so keep your profits in perspective and keep in mind that the market isn't meant to give you money. That's why it's called profit-taking.

Above all, after you've taken a profit, avoid making impulsive trading judgments. You may be tempted to rejoin the same position if the market continues to move in the direction of your previous position. Reentering the same position may be the appropriate thing to do in some situations, but you risk overstaying your welcome unless you review the market objectively and without the emotional baggage of previously being right (but not as right as you could have been).

Also, resist the impulse to adopt a stance in the opposite way all of a sudden. If you were short and prices fell, and your research and approach lead you to buy back your short, you could be tempted to go into a long position.

After all, if you were correct in your prediction that prices would fall, and you're now buying back your position, the market must be moving up - otherwise, why would you be purchasing now? However, this is a completely different deal from the one you mentioned previously.

Treat each deal as a separate entity, and understand that the outcome of one trade has no influence on the outcome of the next. Instead, take a step back and re-evaluate the market once you've restored your perspective as a result of being square.

Partially profiting

Taking partial gains on the entire position is one technique for traders to continue in the market with a winning position while waiting for a possibly greater move. Taking partial gains, of course, necessitates the capacity to trade in several lots – at least two. The concept is that when prices move in your trading position's favor, you profit on a percentage of your whole stake.

You may have purchased 15 mini lots for a total position size of 150,000, for example. If prices continue to rise, you may sell off sections of your entire position, profiting on a portion of your investment, while keeping the rest if the pricing trend continues to favor you. If prices turn around, you've minimized your market exposure and may still make a profit on the deal overall. You can take profits until your position is entirely closed out if prices continue to increase.

You must adjust the size of your stop-loss and other take-profit orders to account for the

drop in your overall position size if you take partial gains. Some online brokers provide a position-based order-entry mechanism, in which your order size adapts automatically when the overall position changes.

Closing partial positions may be regarded differently depending on the country in which you trade. Forex providers in the United States must account for your trades on a first-in, first-out (FIFO) basis. If you buy one lot at 30, another at 20, and a third at 10, you'll be long three lots at an average of 20. When you finish your first lot, you'll sell the one you bought when you were 30. You may pick which specific lot you want to shut in most other jurisdictions.

Although there is no practical difference in your margin balance, some traders choose to close out the lots with the highest profit. The point here is that you've averaged into a position, and in order to benefit under either

strategy, the market must reverse beyond your average. If you just benefit on the lots that are in the money, you risk losing money on the ones that are still out of the money. If the market never completely reverses, it's still working against you, and you'll need a plan to get out.

Before things get any worse, I'm going to call it a day.

You must always determine where to quit a trade if the market does not move in the direction you predict as part of any trade plan and to safeguard your trading money for future trading. Spend as much time and attention as you need to locate that level, bearing in mind that a lot of short-term price activity is driven by stop-loss orders.

Expect key technical and price levels to be examined to determine if there are any stop-loss or market orders in place. Trading markets devote a significant amount of effort

to level testing. As a result, based on the specific currency pair and the current market condition, we like to build in a margin of error when establishing our stops. (We go over the benefits and drawbacks of using a margin.)(we go over the margin of error for stop-loss orders in greater depth.)

When a stop-loss order is triggered, no one is happy, in our experience. Stop losses are, unfortunately, an unavoidable evil for all traders, large and small. You can't predict where a price movement will end, but you can manage where you quit the market if it doesn't go in the direction you expect. Stop losses, above all, are a crucial instrument for avoiding manageable trading losses from becoming devastating.

Because no trader is perfect all of the time, being stopped out is an unavoidable element of trading. Traders that use sensible and disciplined stop-loss orders may have losses from time to time, but they will escape being wiped out and will be able to trade the next

day. Traders who do not utilize stops or adjust them to avoid being triggered risk being completely wiped out if the move is significant enough.

For bigger price fluctuations, use trailing stop losses.

Trailing stop-loss orders, which are commonly used to safeguard profits and enable traders to capture greater market moves, are one sort of stop loss that traders may actually appreciate having activated. (In Chapter 4, we go through how trailing stop-loss orders function.)

Trailing stops don't ensure that you'll be able to stay onboard for a greater directional price move, but they can add a level of flexibility to your trading plan that you should consider. If your trade is in the money and holding above a big technical break level, for example, you might want to consider switching to a trailing stop with a beginning point on the other side of the technical level.

You'll be able to capture more than you would otherwise if the break leads to a longer prolonged advance. The trailing stop will reduce the harm if the break is reversed.

Setting it and forgetting it: allowing the market to place your order for you.

You'll have active orders out in the market to cover your position one way or the other once you've recognized a trade opportunity and built a risk-aware trading plan (stop-loss or take-profit). You can legitimately adopt a set-it-and-forget-it trade strategy where your orders watch the market and your position for you, depending on your trading style and the trade setting.

Due to the lengthier time frame of such trading techniques and the constraints of watching the market overnight or for longer periods of time, medium- to longer-term traders are more prone to rely on set, or

resting, market orders to cover open positions.

Remember to set up rate notifications to keep you informed about specific price changes (see Chapter 15). The classic image of a forex trader sleeping with a phone under his pillow isn't too far off the mark. You may alter your orders in a matter of seconds or minutes, depending on how your trade is progressing, and go back to sleep (or whatever it was you were doing).

Because of the shorter time period of such deals, shorter-term traders are more inclined to use a more dynamic strategy. While short-term traders are more likely to be in front of their trading displays or utilizing trading applications on their smartphones while their trades are still open, they should always have an ultimate limiting set of orders to cover the trade plan.

You may wish to be flexible with your take-

profit order's location, but you should always have a stop-loss order in place to protect yourself in the event of unexpected news or market changes. If you're trading the market long (meaning you believe the price of a currency pair will rise), you'll need to determine the final price level on the downside, which undermines the short-term outlook.

Getting to the bottom of things after they've happened

There will be very real markings suggesting what, if any, modifications you should make based on the basis of the trading opportunity you've spotted.

Fundamental event trades (such as a data release or an expected monetary policy pronouncement) have a very real time and content basis. If you've taken a position based on a data release, such as a report, the information is now available to you and the rest of the market.

If you've predicted different outcomes for the report, you'll have an advantage over the market when it comes to deciphering the price movement that follows. If the market isn't responding as you expected, it's a good indication that other factors are at play. In most cases, the market reaction to the data or news is more crucial than the event itself.

The most crucial thing is that the event that will serve as the foundation for your trade plan has occurred. If the market does not react as you expected,

You have virtually little motive to maintain your current employment. Always connect your original justification for maintaining your position to the realities on the ground. When things don't turn out the way you intended, start looking for an exit as soon as possible.

Exiting at the opportune moment

When it comes to trading, it's often claimed that time is everything. There have never been truer words stated. That statement, however, pertains to trying to time your entry and departure to catch market peaks and bottoms – market timing.

However, we're discussing the time on the wall clock. The time of day and the day of the week may have a big impact on how prices move and how your overall trading plan works. If you're trading ahead of a large data release, for example, you should be mindful that price movement will be influenced in the lead-up to the event, as well as in the aftermath. There's no way to predict how markets will react before data is released.

However, you must be vigilant for forthcoming developments that may need modifications to your trading strategy.

Similarly, if you've been appropriately positioned for a directional price move in the morning in New York, you should be aware

that a price response may occur when European traders wrap down their trading day. The price movement may continue in the direction it was moving at some London closes, while at other times it may reverse. But the question for you, as a trader, is whether you truly want to know which way it goes.

At the very least, you should change your trading strategy to mitigate the unfavorable impact of session closures, such as lowering your position size, tightening stop losses, or squaring up completely.

You may be dealing with varied liquid-ity circumstances depending on the day of the week (such as a holiday, a month end, or a quarter end, which frequently see lower liquidity and the chance for outsize volatility). If you're looking for a unique way to express yourself, here is the place to

The market will close for the weekend in a matter of hours on Friday. You face the

danger of being exposed to weekend gap risk if you keep your job. Do you want to wait until the last minute and risk being caught off guard by price fluctuations?

Keeping track of the time of day is just as crucial as having the appropriate position while trading. It often pays to be a clock-watcher when it comes to modifying your trading plan or closing out your position.

When the price is correct, get out.

When it comes to market data, the prices themselves are always the most dependable source. Sharp price responses are typically good signs of considerable market interest, which is either driving prices in the same direction or repelling them in the opposite way.

You should be aware of big price movements, such as spike reversals or price gaps, as you

watch your position in the market, with a suitable benchmark being more than 20 points over a few minutes. The sudden price change might be the result of news or rumors, or it could just be a pocket of illiquidity. In either case, the fast price change has its own importance, which you should be aware of.

There's no one-size-fits-all manner for such maneuvers to play out, but if you're on the lookout for them, you'll have another piece of data to assist you determine when and how to abandon your position.

If the swift price change was in your favor, you may consider it a new high-water mark, as well as a new level of support or resistance. The tide is turning, and you should consider quitting sooner rather than later if the move is reversed.

If the trend continues, you'll have a strong short-term price level to base your future selections on. If the price move went against you, you may want to think that the market

isn't cooperating and take a more defensive approach, such as tightening stop losses, decreasing your position, or leaving entirely.

EXAMINING YOUR TRADING PLAN

Currency trading is both a learning experience and a speculative enterprise. Good traders learn from their errors and try not to make the same ones again. Bad traders continue to make the same mistakes until they either quit up in frustration or are forced to give up due to financial constraints.

Successful trades are wonderful learning opportunities, both in terms of how certain trading techniques operate and in terms of your own emotional reaction to them. Successful traders remember what they did

successfully and strive to replicate it in the future, despite the fact that no two deals are alike. Bad traders merely recall that they won, but they don't pay attention to the reasons why they won.

Making post-trade analysis a regular part of your trading practice is the greatest way to learn from each trading experience, both good and negative.

Identifying what you did well and what you did poorly

Regardless of the outcome of any deal, you should review the entire process to determine what went good and what went wrong. Ask yourself the following questions in particular:

How did you come across the business opportunity? Was it based on technical analysis, fundamental analysis, or a mix of both? As a fundamental or technical trader, looking at your trade in this light will help

you discover your strengths and shortcomings.

If technical analysis is responsible for a higher percentage of your winning trades, you should focus your efforts there. If the fundamental method is responsible for the majority of your successful trades, you should probably focus on that strategy.

How did your trading strategy work out? Was the position size appropriate for the risk and return situations, or was it excessively large or small? Could you have done a better job if you had entered at a higher level? What strategies did you employ to optimize your entry timing? Were you patient enough, or did you rush in because you thought you'd never have another chance? Was your take profit a realistic figure or a fantasy? Did the market respect your take-profit thresholds, such as halting short of them, or did prices simply fly right past them? When it comes to your stop-loss level, ask yourself the same questions. Use the information to fine-tune

the size of your job, entrance level, and order placement in the future.

How successfully did you run the business after it was up and running? Were you able to keep a close eye on the market while your deal was open? If so, how would you go about doing it? Why not, if not? The answers to those questions will disclose a great deal about how much time and effort you can put into your trading.

Did you make any changes to your trade strategy along the way? Did you make any changes to your stop-loss orders to safeguard your profits? Is it true that you only made a half profit? Did you close the deal according to your strategy, or did the market surprise you in any way? You'll discover what influence your emotions may have played and how disciplined a trader you are based on your responses.

In this evaluation procedure, there are no right or incorrect responses. Just be as honest

as you can with yourself. You have nothing to lose by being honest because no one else will ever know your responses. On the contrary, figuring out what you're excellent at, what you're not so good at, and how to approach the market the best way possible can benefit you much.

Keeping your trade history up to date

Individual trade recollections might be foggy at times. Some traders have a proclivity for remembering winning transactions, while others have a proclivity for recalling just negative trades. Looking at the data – the results of your transactions over a specified time period, like as a month — is the only way to get to the core of the problem.

Although a trade record does not lie, it must be correctly interpreted in order to learn anything helpful. We've discovered that, depending on your trading style, it's better to look at your trading history from two distinct

perspectives, both with the same denominator — average wins and average losses.

Long-term and medium-term traders: Have fewer total transactions since they're more inclined to approach the market from a strategic standpoint, selecting trading opportunities more carefully. If that's the case, you'll want to keep track of your earnings and losses on a per-trade basis, tallying the number of winning and losing transactions separately, as well as the overall amount of winnings and losses. To calculate your average winning trade amount, divide the number of gains by the number of winning deals. Make the same adjustments to your lost transactions.

Short-term traders: Due to their short-term trading approach, they tend to have a higher number of deals. If that’s you, you’re going to want to measure your results on a per-day basis. Add up your daily profit and loss (P/L) and keep track of how many winning/losing days there are in a month, as well as the

average win/loss each day.

Your findings might help you better understand your trading strengths and limitations. The main goal is to determine how proficient you are at recognizing transactions and how your financial gains and losses compare.

You're on the right road if you have more winning transactions or trading days each month than losing ones. You're probably good at finding trading opportunities or aggressively trading in and out of the market. If your lost days or trades exceed your successes, you probably need to take a long hard look at how you’re identifying your trades or making your short-term judgments.

Next, you want to look at the magnitude of your average win and average loss. If your average victory exceeds your average loss, you're doing something right, and that's a good sign. When you're right, you're right for a longer period of time than when you're

wrong, and that's exactly how you want it.

Concentrate on what you're doing well while simultaneously identifying what you're doing incorrectly. Break down your trading outcomes into smaller categories, such as day of the week, currency pair, or even trade size, to improve your analysis. Do you have a pattern of losing days or transactions on specific days of the week, such as Fridays or Mondays? Trading on the last day of the month, for example, has shown to be a losing strategy in our own experience. Do you have a pattern of losing trades in specific currency pairs? Is there a link between the size of each trade's position and the number of wins and losses? For example, do you win more on larger transactions or do you lose more on smaller trades?

Examine your results with as much objectivity as possible. They're a true

indication of your foreign exchange trade. Learn from them and apply what you've learned to the following:

Maintain your integrity. You may only recall the profitable transactions and be unaware that you're building poor risk-management practices.

Recognize any potentially risky behaviors or lapses. You'll create and enhance your trading style over time. If you're successful, you'll want to keep it that way, and the best way to accomplish so is to keep track of your trading outcomes on a regular basis. If you lose more money than usual on a lost transaction, you should consider reducing your risk. If you're winning on a higher percentage of days or transactions than usual, you should take a reality check to ensure you're not overextending yourself.

Make yourself your own best instructor. Determine your skills and limitations, as well as the trading techniques and market situations that are most suited to your

personality and discipline. Concentrate on the ones where you've had the most success and stay away from the ones where you've had the worst luck.

Determine the best market sessions and currency combinations for you. Interpret your trading outcomes to identify the currency pairings in which you've had the most success and those in which you've had the least. It's possible that you'll need to adjust your trading schedule and focus on only a portion of a trading session.

It's all about getting the most out of your money when it comes to currency trading. In order to improve your trading abilities, refine your trading techniques, maximize your trading strengths, and minimize your trading weaknesses, you must evaluate your trading outcomes on a regular basis.

In an article at www.dummies.com/extras/

currencytrading, you'll find 10 beginning trading blunders.

In this section...

Discover the most successful traders' good behaviors.

Effectively manage risk.

For further information, look for resources.

SUCCESSFUL CURRENCY TRADERS' TEN HABITS

Getting into the swing of good trading habits

Keeping track of market developments and pricing levels

Increasing the focus of your trading

Trading with a strategy in mind and adhering to it

The top forex traders we've ever seen follow ten guidelines, according to us. Many of these principles apply to traders in any market, but some of them are exclusive to the stock market.

They're only found in the currency market. The key point to remember is that no one is born with all of these behaviors. The only way to get them is to follow in the footsteps of previous great currency traders and gain patience, discipline, and experience.

Trading with a Strategy

Without a well-thought-out game plan for each deal, no successful trader will persist very long. Sure, winging it may bring you some short-term success, but the day of reckoning will undoubtedly come. Position size, entrance point, stop-loss exit, and take-profit exit are all part of a successful currency trader's strategy for each position.

They keep their take profit objectives flexible, sometimes accepting for less if they believe that's all they can get out of the market right now, and other times extending their profit targets if market movements are turning in their favor. But they never change their stop-loss orders from their initial settings unless it's to lock in earnings.

Predicting the Outcomes of Events

Trading is a lot like chess, where the top players anticipate many moves ahead of their opponents. Successful forex traders anticipate future occurrences and analyze how much the market has priced in (or not priced in) a desired outcome. They also evaluate how people will respond if the event meets or exceeds their expectations. Then they build a trading system a set of tactics depending on the many outcomes The forward-thinking trader has a game plan in place and is ready to trade while the rest of the market is trying

to figure out what to make of the event, examining charts and redrawing trend lines.

Maintaining Flexibility

Currency traders who are successful avoid becoming emotionally committed to their investments. They understand that it isn't about being right or wrong, but rather about generating money. Instead than waiting for price movement to pull them out of a trade, they adjust to incoming news and information and promptly quit an open position if circumstances run opposite to it.

At the same time, they're on the lookout for new opportunities in the market and are ready to act. They must provide enough room for extra employment in order to be prepared. They also require a continual mental model of other significant pairings in order to incorporate new information and occurrences. They may not be actively trading AUD/USD, but they are well-versed in the Australian

currency.

Getting Ready for Trading

Currency traders who succeed are constantly prepared, at least as much as is possible in a market that is open 24 hours a day and exposed to unpredictable happenings half a globe away. Successful currency traders prepare for the following to stay on top of their game:

In the coming week to two weeks, the following economic statistics will be released: Know what the previous report said and what the upcoming report will say.

Speakers to be announced: Determine who is speaking (central bankers or financial officials), what they have previously stated, and what they are likely to say this time.

Interest rate setting meetings and announcement times at the central bank: Know when they'll be held and what the market is anticipating.

Important gatherings of financial leaders, such as G20 summits or Eurozone finance ministers' regular meetings: Find out whether currencies are on the table and what measures might be expected.

Liquidity conditions: Be mindful of time periods when market liquidity may be impacted, such as the end of the month, market closings or holidays, and time of day (for example, European closure, option expirations, or daily fixings).

Unexpected price movements: Use rate alerts to keep track of price swings that are outside of typical ranges. Check for important news and analyze potential trade opportunities by following up on notifications.

Maintaining Technical Vigilance

Successful currency traders are aware of critical technical levels in the currency pairs they trade, even if they aren't using a

technical-based trading method. They understand critical Fibonacci retracement levels, numerous moving averages, crucial short- and long-term trend lines, and notable recent highs and lows, for example (see Chapter 11).

You may be trading primarily on price behavior or momentum analysis, but as part of your overall strategy, keep an eye on crucial technical levels.

Trading the Range/Going with the Flow

Currency traders that are successful are able to determine if the market is moving or likely to remain in ranges. When they believe the market is trending, they try to move with it rather than against it. They search for levels to get long at when the short-term trend is up, and vice versa when the trend is down. They're also aware that trends halt and correct regularly, so they're actively profiting at important technical moments while the

greater trend progresses.

When the market conditions favor range trading, effective currency traders can shift gears and become contrarians, selling at the top of the range when everyone else is buying or buying near the bottom when everyone else is selling. They've also established an ultimate point when the range is breached while they're in range-trading mode. They throw in the towel without remorse if that moment is reached, even even reversing direction and jumping on the breakout.

Concentrating on a Small Number of Pairs

For the most part, many effective forex traders trade only one or two currency pairings. They can gain a better sense of such marketplaces in terms of pricing levels and price behavior by doing so. It also reduces the quantity of data and information they must track. Above all, they understand that various

currency pairings have distinct trading characteristics, and they can alter their strategies accordingly.

Prior to attempting to widen your horizons and take on the entire market, concentrate on getting knowledge and success in just one or two main pairings. Only look at other pairs if they're moving or trading at important levels.

Profit Protection

There are various market aphorisms on the advantages of profit-taking, such as "You can't go broke profit-taking." "Bulls and bears both receive a place at the table, but pigs get slain," is one of our faves.

Successful traders take profits on a regular basis, whether it's a partial take profit (cutting the size of a successful position) or a total

take profit (squaring up and stepping back following a lucrative market movement). Above all, effective traders focus on maintaining what they've made rather than giving it up for the possibility to make a bit more when a deal is profitable.

If you don't take some money off the table every now and again, the market will.

Stop Losses in Trading

Every successful trader loses money at some point. Their long-term success is due to the fact that their losses are tiny in comparison to their typical winning transactions. The most important thing is to always have a stop loss in place to avoid a lost transaction from becoming an account killer.

Although no one enjoys losing money, the finest traders can accept it as part of the price of doing business. And the only way they can

take losses on a regular basis is to keep them small to begin with. You're halfway there if you can master this habit.

Keeping an Eye on Other Markets

Currency trading isn't done in a vacuum, and skilled traders monitor other important financial markets on a regular basis. The benchmark bond rates of the main currencies (US, German, etc.) are the principal markets they focus on.

Oil, gold, and key global stock indices, as well as ten-year government bonds from the United Kingdom and Japan.

They turn to these other markets for confirmation of short-term U.S. dollar directional bias on an intraday basis. For example, if the dollar is increasing, US ten-year rates are rising, and gold is falling, it's a sign that other markets are supporting the dollar's rise. If rates stay flat or fall as gold

rises, the dollar's rise may be short-lived. Currency traders, like currency traders, look at other markets for significant technical levels and general directional trends on a longer time scale.

Spend the extra cash on charting services with live rate feeds for the other markets.

TEN RISK MANAGEMENT RULES

Keeping the financial risks to a minimum

Getting a grip on human behavior

Managing your exposure to the market

When people think of risk management in the context of currency trading, the first thing that comes to mind is the possibility of losing money.

That is, without a doubt, the greatest danger.

Traders, on the other hand, may go along a number of streets before arriving at their ultimate realized profit or loss location.

Risk management is a multidimensional process that does not end with the final trade total, as we emphasize throughout this book. Check see Chapter 13 for further information on the various types of risk in case you missed it. What you don't know might sometimes be harmful.

The way you traverse the risky paths has as much to do with trade results as it does with whether or not you make it to your destination. In this chapter, we'll go over 10 risk management guidelines that will help you with your forex trading.

Stop-Loss Orders are used in trading.

Stop-loss orders are the most effective risk-management instruments. (With the exception of data/events, when stop-loss

order executions may experience significant slippage.) By not include positions in press releases, you may avoid this danger.) You're exposed to nearly infinite risk if you trade without stop-loss orders.

Always have a stop-loss order in place for any open positions, and don't alter it unless you're protecting winnings. Before you initiate a trade, do your research and risk assessments, and then stick to your trading strategy.

Keep your leverage to a bare minimum.

The size of your investment will ultimately define how much financial risk you face; the larger the stake, the higher the risk. Don't be swayed by high leverage ratios into taking on too much risk. Trading a position that is too large in relation to your available margin diminishes your buffer against ordinary market fluctuations. Keep the amount of leverage you employ to trade your approach to a bare minimum.

Most forex brokerages will allow you to request a lower leverage ratio in order to systemically reduce your leverage usage. You don't have to utilize the entire 50:1 or 100:1 lever-age just because they provide it.

Trade with a Strategy

Before you establish a position, prepare a thorough trading strategy from entry to exit (stop loss and take profit). This is the greatest method to limit the unavoidable emotional reactions that occur with trading. (The benefits of trading with a strategy take up the majority of Part III.) Having a trade plan for each approach will also avoid you from speculating on the spur of the moment or overtrading (always having an open position). Of course, no trading strategy will work if you don't stick to it, which gets us back to trading's human hazards. If you make a trading plan in the first place, you'll have a far higher chance of adhering to it.

Keep an eye on the market.

Make sure you know what's going on in the market and with the currency pair you're dealing. Understand what data and events are planned in the next days and weeks Consider liquidity circumstances during the course of your trading plan's duration.

What has the market put a price on and what has it put a price on? Anticipating market events and conditions won't guarantee a profitable transaction, but it will alert you to potentially risky situations that you may include into your trading strategy to reduce total risk.

Trade with a Competitive Advantage

The currency market is open 24 hours a day, but it doesn't imply you have to be there at all times. Choose your places and your time carefully; don't get drawn in by the din. Keep

your ammo dry and hunt for trade opportunities that have a clear risk/reward scenario. Take advantage of any opportunity that comes your way. Ten Risk Management Rules.

Instead of getting caught up in the current market movement, spend your time and effort looking for future trading chances. Other opportunities will inevitably arise, and you'll be prepared to take advantage of them.

Take a step back from the marketplace

When you're not in the market, something weird happens: Your perspective is sharper; your objectivity is at an all-time high; and you aren't emotionally committed in a market position. On a regular basis, square up and take a step back from the market. Take advantage of the downtime to complete your charting and fundamental analysis. Take a total break from the markets and forget about them for a while. You'll be rejuvenated and

able to think more clearly when you return, ready to take advantage of new trade chances.

Profit on a regular basis

Taking profits on a regular basis is the most reliable strategy to reduce risk. By definition, taking profit — even a small profit — reduces your market risk exposure. Your trading strategy may include a higher profit objective, but if market events go your way, it's a good idea to safeguard your gains by taking partial profits or changing your stop-loss orders to lock in some of the gains.

It might be a fluke that the market surged 40 pips in your favor following a data release, or that the market sank 50 pips 10 minutes later. Taking a profit is the only way to be certain. You can't make a profit and go bankrupt.

Understand how to choose a currency pair

Market risk varies greatly between currency pairs, depending on volatility, liquidity, data sensitivity, and a variety of other variables. Each currency pair has its own quirks, necessitating a separate set of analytical tools or strategic methods. Different currency pairings have different margin utilization and pip values. Make sure you know what currency pair you're trading and that your trading strategy fits the features of that pair. (The trading behavior and drivers of the most actively traded currency pairings and crosses are examined in Chapters 8 and 9.) Not all currency pairings are created equal.)

Double-check your work for accuracy.

Currency trading is a fast-paced market, and computerized trading makes it even quicker. The potential of human error while entering trades and orders is always there, and you must exercise caution to avoid costly mistakes. If you set a stop-loss order for the

wrong currency combination or the improper amount, it won't benefit you. Make it a habit to double-check every trade and order entry you make, ideally before submitting it but at the very least right away. Everyone makes mistakes, but only irresponsible traders allow little errors to escalate into major calamities.

Remove funds from your trading account

This isn't something you'll find in many trade books: Make frequent withdrawals from your trading account if you've made any money in the market. We

It's referred to as "taking money off the table." If you keep your profit in your margin account, it will be vulnerable to future trading choices, which is an uncertain risk. Maintain a margin balance that permits you to trade in increments that are comfortable for you. Also, keep in mind why you're trading in the first place: it's not just about the money, but also about what you can accomplish with it.

Withdraw your winnings and spend or invest them as you already stated.

TEN NTASTIC RESOURCES

Educating yourself on technical analysis

Creating a strategy and a discipline

Emotional intelligence and psychology

Getting access to economic data reports from the inside

His book provides a great basis for learning the ins and outs of currency trading, but it does not cover all of the subdisciplines.

technical analysis, market psychology, and strategy formulation are just a few examples. Those topics are in-depth and rich enough to justify more research as you create your own trading style and approaches. We hope you'll find the following suggested extra sites very useful in learning more about the technological tools, economic data reports, and strategy and psychology applications.

Financial Markets Technical Analysis is a term that refers to the study of how the markets work.

John Murphy's book, Technical Analysis of Financial Markets: A Comprehensive Guide to Trading Methods and Applications, is a comprehensive guide to trading methods and applications (New York Institute of Finance),is a technical analysis encyclopedia published by one of the market's most prominent technical practitioners. All of the tools are covered by Murphy.

All of the rules are covered in detail, both

theoretically and practically. Murphy also provides one of the most thorough evaluations of chart patterns available anywhere. If you only have room in your collection for one technical analysis book, make it this one.

Techniques for Japanese Candlestick Charting

We're big fans of candlestick charting, and we think Steve Nison's Japanese Candlestick Charting Techniques: A Contemporary Guide to the Ancient Far Eastern Investment Techniques, 2nd Edition (Prentice Hall) is the greatest book on the subject. Nison delves into the language and cultural connotations of the various candle patterns, giving you a better intuitive knowledge of the patterns. You'll be better able to recognize feasible candlestick patterns and grasp what they're saying you if you have a better comprehension of them. We have this book on hand and refer to it regularly when

observing candlesticks. (In Chapter 11, we look at a few significant candlestick patterns.)

Principle of Elliott Waves

If you want to understand more about the Elliott wave principle, A. J. Frost and Robert R. Prechter, Jr.'s Elliott Wave Principle: Key to Market Behavior (Wiley) is the book to get. Elliott wave patterns are crucial to understanding currency price fluctuations, especially if you want to trade from a chart.

a medium- to long-term viewpoint This book presents the concept underlying Ralph Nelson Elliott's price pattern ideas, as well as practical examples of how to apply them to all financial markets.

Dummies' Guide to Technical Analysis

Barbara Rockefeller's Technical Analysis For Dummies, 3rd Edition (Wiley) is a great introduction to the various and different tools

and methods of technical analysis, all presented in the For Dummies approach. Rockefeller walks you through all of the key tools and tactics, as well as lots of real-world dos and don'ts you can use to your own trading.

The Legend of the Five Rings

Go Rin No Sho is the Japanese name for Miyamoto Musashi's Book of Five Rings, which was translated by William Scott Wilson (Shambhala). This small (approximately 150 pages) book provides a wonderful introduction to the theory of strategy and tactical combat principles. Musashi was the greatest samurai of all time, and this book is his summation of all the laws of strategy and swordsmanship he learned during his career. Ten Excellent Resources (Chapter 19)

Musashi's advice on timing and remaining

calm in the face of adversity is as relevant to effective trading now as it was to martial artists in the mid-seventeenth century, when the book was first published. This is not a book to be read once and then forgotten about. Take it out and read it again and again. Not only does it provide suggestions, but it also contains information.

It not only teaches strategy and mental discipline, but it also teaches personal fulfillment and how to live a spiritual, focused, and balanced life.

Interviews with Top Traders in the Market

Jack D. Schwager, a veteran trader himself, interviews luminaries of the trading industry for their insights and trading philosophies in Market Wizards: Interviews with Top Traders (Wiley). Wizards isn't only about the forex market; it also covers equities, futures, and currency trading. You'll discover how traders

like Richard Dennis, Bruce Kovener, and Paul Tudor Jones, to mention a few, go about their business. These traders are now living legends, yet they all began humbly and rose to prominence via discipline, strategy, and dedication while dealing with strong psychological demands. These guys have a lot to offer if you're looking for a trading style.

Please enter My Trading Room.

Dr. Alexander Elder (Wiley) wrote Come Into My Trading Room: A Complete Guide to Trading, which was authored by a professional psychiatrist and trader. If you're new to the markets, Elder's views on personal psychology and emotions are very helpful. His book provides a comprehensive explanation of all areas of individual trading, from emotional understanding to money and risk management to following the habits of a disciplined trader.

Zero Hedge is a term that refers to a

Zero Hedge (www.zerohedge.com) is a financial news website and content aggregator that covers economics and Wall Street happenings. Because of its counter-intuitive analysis, this is one of the first websites we visit every day. It frequently takes the opposing viewpoint to that of the market, which may be a refreshing and much-needed shift of perspective. The site also features some of the most intriguing and timely research from some of the world's leading analysts. Tyler Durden, a character from the film Fight Club, is the alias used for the posts. There is a lot of conjecture about who Tyler Durden is; as of this writing, nothing has been proven. Make sure to follow @zerohedge on Twitter to keep up with our Zero Hedge.

BabyPips.com

Although BabyPips.com (www.babypips.com) claims to be a

"beginning's guide to forex trading," some of the postings are rather advanced, thus we recommend it for the novice to intermediate trader looking to improve his skills. One of the nicest aspects of this website is that some of the contributors are willing to speak with you.

via their professions They discuss the rationale behind their transactions, as well as the setup and execution. After the deals are closed out, they frequently publish to let you know what went well and what didn't, as well as why. This website is an excellent resource for learning about market dynamics and market discipline.

The Forex Factory is a company that specializes in

Forex Factory (www.forexfa.com) is an online currency trading platform.

It may not be as attractive as other sites, but it is a very helpful resource. This is why:

It includes one of the most widely used economic calendars, which is particularly handy if your broker does not give one.

It offers market news as well as a trading feed with its members' most recent positions, which is updated in real-time.

Forex Factory's trading forums are maybe the most valuable feature. These forums feature several chat threads that allow you to join a community of retail traders and discuss your ideas, concerns, and so on.

It's completely free!

TRADING TECHNIQUES

This Appendix contains

Identifying the sort of trader you are

Obtaining trade concepts that can be implemented

Creating a plan based on the sort of trader you are

The FX market is the world's largest financial market. With a daily turnover of more than $5 trillion, there are lots of opportunities.

links for retail traders, but those chances

won't come easy - you'll have to work hard to succeed in the forex market. We assist you achieve just that in this appendix by guiding you through the process of selecting the best trading strategy for you and providing recommendations on how to put it into practice.

What is your zodiac sign? Identifying Your Trader Personality

There are dozens of forex methods available, but you must select the one that best suits your needs. We've divided traders into personality categories at FOREX.com and designed particular methods for each. We've found three different categories of traders:

A scalper is a trader who searches the market for short-term, marginally profitable chances that can stack up over time. If you are looking for a unique way to express yourself,

You don't have the patience to maintain a position for an extended amount of time as a scalper, and you become bored rapidly when you keep trades open for too long. You're driven by the thrill of watching fast-moving markets and, on occasion, trading around important news events to capitalize on the huge possibility of a massive shift in a short amount of time. You're not delighted about losing a trade, but owing to the small size and frequency of your deals, you're usually less affected monetarily and emotionally.

Swing trader: A swing trader is someone who prefers staying in a trade for a short period of time, such as a few hours or even days. If you're a swing trader, you enjoy the analytical element of trading, such as seeing emerging patterns and exploiting them like a savvy strategist. Because you make fewer transactions on a daily and weekly basis, losing trades can have a greater psychological impact, therefore remembering your long-term goals and adhering to the strategy is

critical.

The position trader: Unlike most other traders, a position trader has a much longer time frame in mind. If your conviction is strong enough, you might remain in a trade for months or even years if you're a position trader. You dismiss the concern of short-term movements based on a basic perspective of political, emotive, or supply/demand logic. You're considerably more forgiving of defeats, and you may go on losing for a long period before admitting defeat.

Take the quiz at www.dummies.com/extras/currencytrading to learn more about what sort of trader you are. It's worth noting that you can switch between trader kinds. You may feel more at ease as a scalper at first, but as your confidence grows, you may opt to be a swing trader, holding transactions for a somewhat longer amount of time.

There is no such thing as a “right” or “wrong” trader type; all you have to do is figure out which one you are and trade appropriately.

Taking a look at trading strategies based on the type of trader

For each trader type, we provide some practical trading ideas in this area. The FOREX.com research team came up with these strategies. Matt Weller, Neal Gilbert, Fawad Razaqzada, Chris Tedder, and our former colleague Chris Tevere all contributed ideas.

Techniques for scalpers

In this part, we'll go through two scalping tactics. The Red Zone and Opening Range Breakout strategies are what we call them.

The strategy of the Red Zone

News trading (buying and selling around high-impact economic data) is notoriously tough, to the point where many traders stop all of their deals ahead of important news releases such as nonfarm payrolls (NFP) or central bank reserves.

Meetings at the bank You need a predefined, disciplined framework to be successful with this form of trading - you don't want to conduct emotional deals at random.

Taking advantage of the market's inclination to gravitate toward round figures, such as 1.3200 in a currency pair like EUR/USD, is one potentially profitable method. The significance of these values can be attributed to two factors:

Stop losses are frequently set at or near these levels by newer traders.

The majority of option strike prices are fixed at round handles.

It's no surprise that these places attract a huge number of traders, as they have a significant impact on the market. The challenge is figuring out how to create a trading strategy that takes advantage of this trend.

We prefer to use the analogy of a football game to discuss the Red Zone approach. The "red zone" refers to the last 20 yards before the end zone, when good teams have historically scored a touchdown 50 percent to 70 percent of the time. (This region is similar to the penalty area in your version of football [which Americans name soccer], where a team is more likely to score a goal on any open shot.)

It's worth noting that a score isn't guaranteed in any of these scenarios (football or soccer, um, football); it's simply more likely.

Trading may be approached in the same way. When an instrument gets within 20 points of a round number (the "red zone"), it becomes more probable that it will continue to that round number, especially after a positive news event.

How does it work?

The following are the Red Zone strategy purchase rules:

Keep an eye out for a news-driven shift.

Set a 0.xx80 buy-stop order ($xx8.00 for gold, $xx.80 for oil).

Set a 0.xx98 goal ($xx9.80 for gold, $xx.98 for oil).

Set a 0.xx60 stop loss ($xx6.00 for gold, $xx.60 for oil).

The Red Zone strategic sale guidelines are as follows:

Keep an eye out for a news-driven shift.

Set a sell stop at 0.xx20 ($xx2.00 for gold, $xx.20 for oil).

Set a 0.xx02 goal ($xx0.20 for gold, $xx.02 for oil).

Set a 0.xx40 stop loss ($xx4.00 for gold, $xx.40 for oil).

You aim to trade heavily traded markets with low spreads, such as major currency pairings, gold, oil, and extensively watched indices, because this is a short-term trading strategy. To increase the quickness of entry and exits, you could wish to limit your trading to times of high liquidity (when many different traders are buying and selling).

In action: the Red Zone plan

EUR/USD is an example of a currency pair.
Buy

The ideal implementation of the technique is shown in this first example (see Figure A-1). The EUR/USD soared to 1.2700 after the announcement of disappointing US housing statistics. The technique proposed placing a buy-stop order at 1.2680 with a stop loss at 1.2660 and a target of 1.2698 in expectation of a continuation to that level. The EUR/USD went on to meet the objective within 15 minutes after the buy order was placed, resulting in a profitable trade. Although the EUR/USD finally rebounded another 20 pips, the first run to 1.2700 was the highest-probability trade.

1.2720

1.2700

1.2690

1.2680

1.2660

1.2640

1.2620

Graph A-1:

EUR/USD

short-term

chart.

000:45:45:45:45:45:45:45:45:45:45:45:

03.45 02.30

05:15:30:30:30:45:45:45:45:45:45:45:45:45:4

1.2600

1.2580

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EUR/USD (Example 2) Buy

After the establishment of a new European Stability Mechanism (ESM) to help the European banking industry, the EUR/USD made another drive for the 1.2700 mark a few weeks later. As in the previous paragraph,

A buy-stop order, for example, was placed at 1.2680 with a stop loss at 1.2660 and a target of 1.2698. However, before reaching 1.2700, rates lost speed and struck the stop roughly an hour after entering, resulting in a 20-pip loss.

As

The inability to continue up to 1.2700, as seen in Figure A-2, anticipated additional consolidation, and prices subsequently rolled over. The chance of a move up to the round number decreases when the currency pair reverses 20 pips from the entry.

1.2700

1.2680

1.2660

1.2640

1.2620

1.2600

Graph A-2:

EUR/USD

short-term

chart.

01:30 02:45

04:00

05:15

06:30

07:45 9.00 10:15 11:30

12:45 14:00 15:15 16:30

1.2580

1.2560

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AUD/USD (example 3) Sell

A sell scalp on the AUD/USD is our final illustration (see Figure A-3). Rates were nearing the 0.9300 level from the topside after dovish Reserve Bank of Australia (RBA) minutes, and the strategy proposed placing a sell-stop order at 0.9320 with a stop

loss at 0.9340 and a target of 0.9302. Following entry, the pair sold off to meet the goal, resulting in an hour-long gain of 18 pips.

Although the AUD/USD fell further from there, the Red Zone strategy is only interested in extracting a limited, higher-probability slice of news-driven swings.

0.9370

0.9360

0.9350

0.9340

0.9330

0.9320

0.9310

0.9300

Graph A-3:

AUD/USD

short-term

chart.

07:15 09:15 11:15 13:15 15:15 17:15 19:15 19th 23:15

0.9290

0.9280

01:15 03:15 05:15 07:15

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Opening Range Breakout is a tactic for breaking out of a rut.

Let's be honest: The goal of any type of analysis, whether technical, fundamental, or statistical, is to find trading opportunities with a better possibility of success. Using a European opening range is one such method. This technique is usually focused on

EUR/USD, although it may be used on any of the main European currencies.

Although the FX market is open 24 hours a day (from Sunday evening to Friday evening Eastern time), market activity in a particular pair is not always steady. The foreign exchange market is usually divided into three sessions:

During the winter months, open at 6 p.m. Eastern time and close at 3 a.m. Eastern time; open at 5 p.m. Eastern time and shut at 2 a.m. Eastern time during the summer months.

How does it work?

Here are the fundamentals:

Identify the high and low for the half-hour leading up to the London open (2:30 a.m. to 3

a.m. Eastern time), then search for a breakout of this range +/–10 pips or 1/10 of the daily Average True Range (ATR) and hold above/below this level for 10 to 15 minutes. You're attempting to figure out which way the "flow" will go for the rest of the day.

Then, using a mix of moving averages (13-SMA, 144-EMA, and 169-EMA) and oscillators, try to manage this bullish or bearish bias on one-, two-, or five-minute charts (RSI, stochastics, and CCI).

Major news releases (generally to avoid) and the time of day (when major markets open/close, option expirations, fixings, and so on) are other elements to consider.

The following are important dates to keep in mind:

Major option expirations include:

New York's deadline is 10 a.m. local time.

Japan's deadline is 3 p.m. local time.

Fixings for currency:

4 p.m. local time in London

8:55 a.m. local time in Tokyo

Currency futures: At 3 p.m. Eastern time, the International Monetary Market (IMM) shuts.

Markets in the United States open at 9:30 a.m. Eastern time and shut at 4 p.m. Eastern time.

If price is struggling around these occurrences (as indicated by a bullish/ bearish divergence using an oscillator), it may be wise to reduce the position size ahead of time. Furthermore, because there is a distinct place to know where you're wrong (the other side of the breakout's high/low), this strategy may assist to minimize the emotional part of trading.

In action: the Opening Range Breakout approach

In this case, the EUR/USD pair produced a significant bottom between 2:30 and 3 a.m. Eastern time (which was anticipated by an RSI positive divergence with price) and then soared upward immediately after (as shown in Figure A-4). The EUR/USD pair was trading comfortably above the two-minute 144/169-EMAs, while the USD/JPY pair was trading below the two-minute 144/169-EMAs.

The period simple moving average (SMA) was still above the EMAs, and the RSI was still finding support in the crucial 40/45 zone. As a result, there was no need to deviate from the optimistic intraday bias.

In addition, as previously said, the time of day is an important consideration. Most London traders close their positions in the currency market between 11 a.m. and noon

Eastern time, while New York dealers shut between 4 p.m. and 5 p.m. Eastern time. As a result, at these periods of the day, price often sees a final end-of-day surge, followed by profit taking (usually recognized by a bullish/ bearish divergence with an oscillator).

In our example, EUR/USD moved higher shortly after 11 a.m. Eastern time to eventually hit the intraday ATR objective of 1.2927, which was subsequently followed by a bearish divergence with RSI just before noon Eastern time.

Graph A-4:

EUR/USD

two-minute

chart.

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Here are some broad observations on possible weekly opening range possibilities (these are merely general results and should not be expected):

During the first two days of the week, you won't be able to do anything (finish roughly flat)

Once a week: Potential reversal and false break

One day a week: Reasonable movement (50-70 pips between highs and lows)

One day a week: ATR objective is met (pip amount generally equal to Average True Range using a 14-day period)

Note that if the ATR is accomplished earlier in the week, the chances of it happening twice in the same week are slim. If it does happen, it usually happens in opposite directions.

When volatility starts to rise, it's typically a good moment to trade currencies rather than remain on the sidelines as a forex trader. As a result, if this strategy has yet to meet the ATR objective on Monday, Tuesday, or Wednesday of a given week, it may be prudent to monitor it closely on Thursday and Friday. If the ATR is achieved early in the week, it's a good idea to keep an eye out for potential market failures in the second part of the week since they might signal a false break and/or outright reversal.

Most importantly, the idea isn't for you to say, "Wow, I need to use this technique right away," but rather to examine how you approach the market on a daily or weekly basis and consider if you're appropriately accounting for time — since time may be more important to a trader than price!

The swing trader's strategies

Two swing trading methods are presented in

this section. They're known as the Favorite Fib and Moving Average Crossover strategies.

The most popular deception method

The Favorite Fib is a Fibonacci-based technique that uses momentum to its advantage. It may be utilized on a variety of time frames and markets, including FX majors, stock indexes, and commodities, giving traders an almost limitless number of options. The method may be applied, for example, in the aftermath of important economic news — ideally, at the outset of the move. This method won't work as effectively if the news simply triggers a corrective rally or sell-off inside an established trend. It works best in markets with a clear strong trend, such as when prices are making new all-time, multiyear, or multi-month highs or lows.

The Favorite Fib method is more successful

when the time frame is longer. It's usually used to one- or four-hour time frames, but it may also be applied to daily time periods. The least amount of time you may apply this approach is 15 minutes.

A review of the Fibonacci sequence

Leonardo Fibonacci invented a number sequence known as the Fibonacci sequence in the 13th century, in which each number in the series is the sum of the two numbers before it. (We could go into great depth here, but we'll spare you the math.) The Fibonacci sequence is as follows: 0, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 144, 144, 144, 144, 144, 144, 144, 144, 144,and so forth, indefinitely.

Fibonacci ratios, which are significant for traders, are derived from this number sequence. The Fibonacci ratios are based on a basic mathematical formula. All you have to do is select a few numbers from the Fibonacci sequence and divide them according to a pattern. Let's pick a number in the sequence

and divide it by the number that comes after it as an example:

1 0 0 0 0 0 0 0 0 0 0 0

1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1

0.5 = 1 + 2

0.667 = 2 x 3 = 2 x 3 = 2 x 3 = 2 x 3

0.6 = 3 x 5 = 3 x 5 = 3 x 5 = 3 x

0.625 = 5 x 8

0.615 = 8 13

0.619 = 13 x 21

0.618 = 21 34

0.618 = 34 55

0.618 = 55 89

Is there a trend emerging here? You will always get 0.618 starting at 21 34 and going out to infinity! 38.2 percent and 23.6 percent are two more notable ratios obtained from Fibonacci numbers. (Note: 50% is not a Fibonacci ratio, but it is frequently used when discussing Fibonacci ratios.)

So, how can we trade with Fibonacci? The Fibonacci retracements pattern, which is commonly utilized in technical analysis, is derived from the connection between these numbers. During a trend, currencies will frequently pull back or retrace a portion of a prior advance before continuing in the previous trend. During this retracement process, we employ Fibonacci ratios to discover crucial support and resistance levels. Fibonacci extensions may also be used to predict where prices will go in the future using the same Fibonacci ratios.

If the trade is predicated on a longer time period, zooming in to a five-minute chart to tweak entry is a smart idea.

How does it work?

The Fibonacci retracement and extension levels used in the Favorite Fib strategy are the 38.2 percent and 50 percent retracement levels (the latter isn't technically a Fibonacci level; see the nearby sidebar for more information), as well as the 127.2 percent, 161.8 percent, and 261.8 percent Fibonacci extension levels.

To illustrate how the approach works, imagine that the market retraces a bit (to point C) after a large upward advance (for example, from point A to point B) due to profit taking and/or top picking, before continuing in the original path (beyond point B). Three price swings are required for the strategy: from point A to point B, from point B to point C (correction), and from point C to point D. (extension). Figure A-5 depicts the standard layout of a Favorite Fib purchase approach.

Graph A-5:

a case in point

of a Fibonacci sequence

purchase strategy

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You're interested in some component of the CD leg of the move in the Favorite Fib technique – the bit beyond point B, where entrance is predicated. A Fibonacci extension level of the BC move would set the profit goal (more on this later).

One requirement for this method to be successful is momentum. As a result, point C should reflect a shallow retracement of AB followed by a continuation in the original trend beyond point B. As a result, if the price retraces more than 50% or if too much time passes before it breaks point B, the entry signal is invalid.

To put it another way, you need a strong advance from point A to point B, a relatively rapid and shallow retracement of less than 50% to point C, and then a continuation toward point D for an optimum entry signal.

All of the strategy's parameters may be calculated after point C is identified.

Entry

The entrance would be predicated on a break of point B, with the goal of riding the move to point D, a Fibonacci level established by the BC swing.

A buy-stop (sell-stop) order a few pips/points above (below) point B, or a market/limit buy order after point B is breached, might be used to enter a purchase (sell) trade.

The transaction will be triggered if you use a stop order to enter. In the case of a fake breakout, however, it might imply purchasing (or selling) at the high (low). Furthermore, if

the market gaps, the entry level may not be the same as the one selected by the trader.

The trader has some time to decide if the breakout above (below) point B is genuine or not by using a market or limit order. If the price remains above (below) point B for a few minutes, the trader may decide to purchase (sell) at the best available price. The danger, however, is that the market may advance fast toward the objective without a pullback, and the trader will lose the chance.

If the entry is predicated on a larger time frame, such as a four-hour chart, the trader may wish to hold off and zoom into a five- or ten-minute chart, where price closes above (below) point B before purchasing (selling).

Targets

The two goals of the Favorite Fib approach are:

The BC level of 127.2 percent, at which point

the stop loss would be modified to break even in order to reduce risk.

The BC extension threshold of 161.8 percent (or occasionally 261.8 percent), at which the position should be closed

Looking at the retracement of the AB swing is one technique to anticipate which level price would most likely extend to (that is, point C). If the retracement is successful,

Point D might be at the 161.8 percent or occasionally 261.8 percent extension of BC if the extension of BC is about 38.2 percent or below. If price achieves a further pullback, such as to the 61.8 percent or 78.6 percent Fibonacci level of AB, point D should conclude at the 127.2 percent extension of BC. Of course, because the retracement is more than 50%, this isn't a proper Favorite Fib entry.

Stop losing money.

The stop loss for a buy (sell) transaction would be below (above) point B, ideally below (above) a minor fractal inside the bigger swing. The distance between the stop loss and the entry should be smaller than the distance between the entry and the profit objective at all times. To put it another way, the risk-to-reward ratio must be more than 1:1. (ideally, 1:2 or better).

Notes on the End

The entrance should be in the direction of the underlying long- or medium-term trend for a higher probability trade.

When trading the Favorite Fib technique, the speculator should be mindful of other, longer-term technical levels. This trade should not have been done if the 200-day moving average is at 1.8560 and the goal for the long position is at 1.8580. In this case, it could be advisable to take profits around the 200-day moving average rather than hoping for a 161.8 percent extension (the original profit

target that was based on a smaller time frame).

When you find yourself wishing for anything to happen, you know you're in trouble and should get out as quickly as possible.

Avoid executing opposite simultaneous bets in comparable markets (for example, long DAX and short FTSE, or long NZD/USD and short AUD/USD, and so on). If the trader is negative on the Australian dollar but optimistic on the New Zealand dollar, she should search for a short trade on the AUD/NZD pair instead.

If price breaches point B, triggers the entry order, and then loses momentum before hitting the first goal (127.2%), the trade should be closed at the best available price (even if it's worse than the entry price – why wait until you're stopped out?). After all, the entire purpose of the entry was predicated on the assumption of a generous continuation move, which has yet to materialize.

You can't make the market give you exactly what you want. Never blame the market for making a mistake; it's all about your skill (or lack thereof) to adjust to changing market dynamics or conditions.

In action, the Favorite Fib approach

Purchase NZD/USD as an example.

Figure A-6 depicts the NZD/USD currency pair before it reaches its Favorite Fib goal.

Graph A-6:

NZD/USD

hourly graph

4th

13:00 – 22:00

5th

16.0

6th

10:00 – 19:00

7th

13.00

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Figure A-7 depicts how the NZD/USD pair reached its Fibonacci resistance level goal. Fibonacci might appear to be a bit magical – the levels of support and resistance actually do work!

Example 2: Purchase the GBP/USD currency pair ahead of a major economic

announcement.

GBP/USD was trading higher ahead of an important economic report, as seen in Figure A-8.

The pound rose to its objective after the release of economic statistics (see Figure A-9). Another example of how Fibonacci extensions may be used in practice is this.

0.80600 0.80597 161.8 percent

Target 0.80590

0.80380

0.80383

127.2 percentage point

Stop at 0.80380 B/E

0.80400

0.80350

0.80215

0.80215

Stop buying.

0.80240

0.80200

Stop 0.79970

0.80000

0.79800

Graph A-7:

The NZD/USD exchange rate has risen.

0.79577

0.78546

0.79597

38.2 percentage point

0.79600

0.79400

0.79200

0.79000

0.78800

0.78600

the intended recipient

0.7840

4th

14:00:23:00:00:00:00:00:00:00:00:00:00

11:01:01:01:01:01:01:01:01:01

14:00:00:00:00:00:00:00:00:00

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Graph A-8:

GBP/USD

hourly graph

The Moving Average Crossover approach is a method of calculating the average of two moving average

Moving averages are a popular technical indicator that may be employed in a variety of markets. Because they're easy to use and use, they've become a standard feature of

many trading strategies. Despite the fact that moving averages have been around for a long time, their ability to be readily evaluated, tested, and used gives them a great basis for current trading methods that combine technical and fundamental analysis.

Simple moving averages and exponential moving averages are the two major forms of moving averages; both are averages of a specific quantity of data over a defined period of time. Simple moving averages aren't weighted toward any one moment in time, but exponential moving averages emphasize more recent data. Simple moving averages are used in this trading approach to assist establish entry and exit signals, as well as support and resistance levels.

Graph A-8:

GBP/USD

hourly graph

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How does it work?

Most trading systems will produce basic moving averages for you, but understanding how they're calculated can help you better grasp what's going on with price action. A ten-day SMA, for example, is computed by dividing the closing price for the previous 10 days by ten.

The SMA shows as a line on a chart that roughly follows price activity – the shorter the time period of the SMA, the closely it will follow price action.

4-period, 9-period, and 18-period moving averages are three of our favorite trading strategies for determining which way the market is headed. Many investors appreciate

the use of these three moving averages, which have garnered recognition in the stock futures market. We keep the essential elements of this approach, but we give them our own twist and apply them to a variety of markets.

Graph A-9:

GBP/USD

hourly graphic following the economic data

data.

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To begin, keep in mind that because shorter moving averages are more focused on current prices, they will hug price movement more closely than longer ones. We may extrapolate from this that shorter moving averages will be the first to respond to a price fluctuation. We're looking at simple moving averages crossing over in this example, which might

indicate a buy or sell opportunity, as well as when to exit the trade (we use simple moving averages because they provide clearer signals in this case). It's vital to keep in mind that this strategy should be implemented in combination with the market's general trend.

Entry

When the 4-period SMA crosses over the 9-period SMA and both of them cross over the 18-period SMA, a buy/sell signal is provided. Unless there has been a significant move higher or lower, the greater the buy/sell signal is the harsher the push from all moving averages. So, if price is drifting sideways and the 4-period and 8-period SMAs are barely drifting over the 18-period SMA, the buy/sell signal is weak, and we need keep a watch on price to make sure it stays below/above the 18-period SMA. If the first two moving averages purposefully shoot above/below the 18-period SMA, the buy/sell signal is greater. (In this scenario, an aggressive push higher/lower from the 18-period SMA might confirm a significant upward/downward

trend.)

If the 4-period and 9-period SMAs cross strongly in anticipation of both passing the 18-period SMA, aggressive traders can enter the position. In this situation, make sure all moving averages are pointing in the same direction as the break and keep a close check on momentum. If momentum begins to wane too soon, it may be a sign of a poor trend. Using medium- and long-term time periods, keep an eye on the general trend. Investors must be aware of retracements in the opposite way if the market is moving in either direction. Price action can retrace swiftly at times, causing the 4-period and 9-period SMAs to cross over the 18-period SMAs quickly, but because it's a retracement and not part of the larger trend, it can quickly lose speed. In the short-term SMAs, a trend that is losing traction will show up sooner. Exit

The strategy becomes more subjective at this point. From here, our preferred strategy is to assess the trend's strength and act appropriately. You may either wait for the

aforementioned moving averages to recross or use your own discretion to determine when to quit the trade. Because significant pushes in either direction might be prone to retracements, it's occasionally worth abandoning a strong trend when it starts to travel in the wrong way over a few time periods. In the event of a weak trend, we prefer to use trailing stops. When the 4-period and 9-period SMAs cross back over the 18-period SMA, it's a significant warning indicator, especially if the trade isn't going as intended (that is, it's a good opportunity to get out to avoid probable more losses).

Stop

A stop should be positioned far enough away from the market to avoid being activated prematurely, yet close enough to limit losses. It's mostly there in the event of a strong spike in the other direction. The 4-period and 4-period and 4-period and 4-period and 4-period and 4-

Before a stop is activated, the period SMAs will cross over the 18-period SMA, which should be a tip to limit your losses.

Notes on the End

Stop orders are strongly recommended for all trades; nevertheless, setting such orders does not guarantee that your losses will be limited.

Examine short and many time periods; for example, look at the 10- and 15-minute charts at the same time.

Your trading strategy should be based on a good risk-to-reward ratio.

Keep an eye on the big picture. Traders who are cautious should avoid going against the grain.

Before you begin the trade, plan your exit strategy and wait for the signs. As the market begins to move, don't let your emotions cloud your judgment.

By combining this method with additional analysis, investors may enhance their chances of discovering trading opportunities. This strategy can help investors discern the general pattern of price action and why the market is behaving the way it is. Is it possible that price movement has just broken through a critical resistance/support zone? Was there a catalyst that prompted price action to jump in one direction or the other?

In use is the Moving Average Crossover technique.

Buy example: ten-minute chart of USD/JPY

After the crossing, there is a significant push upward in price action, and there are a few opportunities to exit the trade (see Figure A-10). It's also worth noting that when the 4- and 8-period SMAs cross back beneath the

18-period SMA, it's a very dull crossing (price action and the SMAs are both quite flat), so we wouldn't be enticed to go short.

Graph A-10:

Making a forecast with moving averages

trade.

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NZD/USD 15-minute chart is an illustration of a sell.

Although there isn't a significant sell signal here, the pair's overall trend is down, so we're comfortable going short (see Figure A-11). We'd definitely have a stop in place, which is entirely discretionary, just in case price movement unexpectedly moves higher.

Graph A-11:

NZD/USD

short-term

chart.

For the position trader, there are a few strategies to consider.

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A position trader's approach is presented in this section. Trading the Ichimoku cloud is what we call it.

How does it work?

It's possible that you've heard about cloud trading. Ichimoku clouds (short for Ichimoku Kinko Hyo, which translates to "one- look equilibrium chart") are what they're talking

about. It's a five-line moving average–based trend detection method, with two of them forming the cloud, the system's core component.

Ichimoku analysis is best used on daily or weekly charts and is used over a longer period of time. The system's components are also particularly valuable in identifying significant levels of support and resistance, in addition to aiding in the detection of trends. Because the cloud is projected several times out, it has a unique property in that it considers both time and price.

Goichi Hosoda, a Japanese journalist, invented the Ichimoku method in the 1930s in Japan. Hosoda worked on his concept for 30 years before revealing it to the world in the 1960s. Despite the system's various components, the technique is simple to comprehend and implement (there's a reason it's called the "one-glance" chart). Ichimoku may also be applied to any liquid financial market. The components and derivations of

the Ichimoku system are covered in this part, as well as how sig- nals of varied degrees of strength are generated.

The Ichimoku chart has five lines, each of which has a Japanese and English name that may be used interchangeably. Because the lines are constructed using highs and lows rather than closing prices, they are called modified moving averages. These lines are superimposed on a price chart so that prices may be evaluated in connection to the Ichimoku chart, helping you to spot trends and critical support and resistance levels quickly and simply.

The Ichimoku chart's five lines and derivations are as follows:

(Highest high + lowest low)/2 from the previous 9 days is the conversion (tenkan) line.

(Highest high + lowest low)/2 from the previous 26 days is the base (kijun) line.

Leading span 1 (senkou span A): Average of previous 26 days' tenkan/kijun lines predicted 26 days ahead

Leading span 2 (senkou span B): Daily average from the previous 52 days predicted 26 days in advance.

Lagging span (chikou): Today's closing forecasted a 26-day lag.

In the conventional method, the numbers 9, 26, and 52 are employed. A trading week in Japan used to be six days long (one week minus Saturday). So 9 repre- sents a week and a half, 26 is the average number of trading days in a month (30 days minus 4 Saturdays), and 52 is the number of trading days in two months.

Leading spans 1 and 2 produce Ichimoku's most noticeable feature, the cloud (kumo). The Ichimoku cloud is formed by the gap between the two lines.

Signals may be produced in a variety of ways utilizing an Ichimoku chart. The most typical way, often known as the basic form, is to look at the price position relative to the cloud. A break above the cloud is considered bullish, while a break below is considered bearish. Within the cloud, price movement reveals a consolidation and, as a result, there is no apparent pattern.

Main form signals are generated by crossovers of the conversion (tenkan) and base (kijun) lines. This is analogous to how a faster moving average (the conversion line) crosses a slower moving average in a standard moving average crossover (the base line).

A bullish signal is formed when the quicker moving average rises above the slower moving average. A bearish signal is created when the quicker moving average crosses below the slower one. The Ichimoku chart differs in that not all signals are created

equal. The intensity of the signal is determined by the location of prices in relation to the cloud:

Price above/below the cloud in the direction of the crossing is a strong indicator.

Price inside the cloud has a medium signal.

Weak signal: When a bearish crossing happens, the price is above the cloud; when a bullish crossover occurs, the price is below the cloud.

The implementation of the approach

Figure A-12 explains how to use Ichimoku clouds to trade EUR/USD. As you can see, this is a daily chart, rather than a weekly chart, because this method might benefit traders who prefer a longer time period.

Graph A-12:

EUR/USD

daily graph

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MONEY'S HISTORY

Richard Thompson, Marvin Loh, and Sarah Swammy

Money is the root of all evil, after all.

1 It's all a matter of faith when it comes to money. 2

The universe revolves around money3

Money has been around for a long time, and

some would argue since the beginning of time, as evidenced by the above quotes. Money is so prevalent that almost everyone has dealt with it and most likely does so on a daily basis. This familiarity, however, does not imply that money is understood universally. As a result, we'll start with the following definition of money, as defined by the International Monetary Fund.

Money can be anything that fulfills the following requirements:

People can save it and use it later since it is a store of value.

It is a unit of account because it provides a common pricing foundation.

Something that allows people to purchase and sell from one another is referred to as a medium of exchange.

While crypto currencies currently do not fit all of the definitional criteria, they do

represent a natural progression of money. Furthermore, many of the most enticing features of crypto currencies are:

1 Timothy 6:10 in the King James Version of the Bible.

Adam Smith is number two (1776).

3 From the musical Cabaret, which was released in 1966.

2018 1 The Author(s)

Crypto Uncovered, S. Swammy et al., https://doi.org/10.1007/978-3-030-00135-3 1

2 Swammy, Swammy, Swammy, Swammy, Swammy, Swammy, Swammy,

Attempt to overcome many of the problems with money that have plagued it throughout

history From the standpoint of these issues, we'll begin with a brief history of money.

Barter

While barter is frequently regarded one of the first forms of money, it does not meet the International Monetary Fund's definitional conditions for money. It's simple to understand how barter develops naturally in a pre-currency society, with the baker eager to swap his bread for butchered meat, as Adam Smith envisioned in The Wealth of Nations. Of course, the restrictions become apparent when the baker must first locate a butcher willing to trade for bread before calculating the ratio of the two items. These two parties must also locate wheat growers and cow ranchers who are interested in supplying the baker and butcher with their inputs. While there are elements of a medium of trade in this example, the conditions that bread (or meat) be a store of value and a unit of account are not met.

These kinds of transactions gradually gave way to a more standardized approach that made a wider range of transactions possible. Within each community, agricultural products such as grain that could be milled or cultivated were generally in high demand by a big section of the population. If there was a general ability to swap that goods for something else, merchants of all kinds would be more likely to accept the widely wanted commodity. While the butcher in our scenario above would not want bread, he would accept grain from the baker in exchange for cattle from a farmer. In response, if grain could be used to buy tools from the blacksmith, the farmer would be more willing to take it as payment. These are broad instances of commodity money development, with salt, tea, and seeds being widely accepted types of "commodity money."

There are a few crucial takeaways from our scenario. For starters, grain has the potential to evolve into a unit of account and a medium of exchange, while its store of value is only

as good as the grain's ability to resist spoilage. Another point to consider is that grain's effectiveness as a currency is founded on widespread belief in its ability to be converted into other goods and services. If enough members of the community abandon that notion, the appeal of taking grain will be hampered, and only those who have a natural need for it will continue to join in this sort of barter.

As a result of this predicament, grain would become just another bartered commodities with various restrictions concerns as outlined above Last but not least, there's the store of value, where a grain's shelf life is limited but can be renewed year after year. In fact, a bountiful crop might overwhelm the market with grain, causing the currency to devalue. As we'll see later in this discussion, this is equivalent to dramatically expanding the amount of money, which in practice leads to inflation because there is more currency available in the economy. For the purposes of this chapter, currency is defined as a medium

of exchange, most commonly fiat currency issued by a central bank with no intrinsic value. Money can be anything that fulfills the following definition.

GETTING PAST BARTER

Shell Money's Long and illustrious History

At least several thousand years ago, in the 1000–2000 BC timeframe, functioning money in a format that we are more familiar with began to evolve. Unlike paper cash or even metal-based coinage, however, the earliest forms of global currency were shells, notably cowry shells. It's logical that someone would want to collect these shells because they're still attractive as jewelry or for display. These shells were appealing as currency because they were durable, relatively light, and had a distinctive appearance that protected them from forgery.

Shells were therefore more tempting than livestock and grain since they were easier to divide, didn't deteriorate, and could be transported more easily. While cowry shells can be found in abundance in the warm waters of the Indian and Pacific Oceans, its use as currency is most strongly associated with China's adoption of the term. China had a big empire at the time and required a mechanism to facilitate commerce across a large geographic area. Obtaining cowry in China was challenging due to its distance from the harvesting fields, in addition to the physical features of the shells noted above. This allowed Chinese rulers to more easily manage the supply of cowry in circulation and, as a result, to control inflation.

While cowry shells are the most commonly mentioned type of shell money, they were far from alone in their function in trade. Wampum, a string of small cylindrical beads fashioned from quahog shells, is frequently mentioned as a means of exchange by American Indians. These specimens also

demonstrate the long-term durability of various clam and oyster shells that served the same purpose as cowry. Wampum was frequently strung together, which added to its allure.

4 Swammy, Swammy, Swammy, Swammy, Swammy, Swammy, Swammy,

Although Indian tribes found drilling, the process of making a hole in these hard shells, to be a labor-intensive operation. While the shells were plentiful, transforming them to tender limited the amount of shells in circulation, so this process naturally controlled the supply of marketable wampum.

This relationship, however, was permanently disrupted by the entrance of Europeans and, more critically, European instruments. Metal tools defeated the shells, allowing Europeans to mass-produce tens of millions of wampum beads by the mid-seventeenth century. This effectively inundated the market with wampum beads, depreciating their value and

eventually rendering them useless as a money. Shell money, however, has a long history as one of the most durable kinds of cash, with samples of cowry shells being used as payment in various African markets as recently as the 1950s.

From shells to coins to paper, there's something for everyone.

The introduction of coinage was the next step in the evolution of money. Metal had been used as a medium of exchange for nearly as long as barter and shells, but coins were first minted in the sixth or fifth centuries BC. The Lydians, an Iron Age empire who ruled parts of modern-day Turkey, are frequently credited with being the first civilization to use standardized metal currency. These early coins were most likely made as ornaments or mementos, but they were quickly adopted as currency. Standardized coinage appeared in various cultures, including Greek, Persian, Indian, and Chinese communities, as adoption and refining progressed.

Electrum, a naturally occurring combination of gold and silver, was used for early coinage. Other metals, such as gold, silver, copper, and bronze, were later used to manufacture coins. The usage of these precious and semi-precious metals served as a store of value in and of itself. Most societies coined numerous sizes of all of these metals, allowing commerce of all kinds of items, large and little, to be facilitated. The type of coins that were introduced was also influenced by the availability of precious metals.

The Persians, who possessed much of the world's gold at the period, were supposed to have produced some of the first pure gold coins. Other societies, such as the Greeks, on the other hand, did not have easy access to gold and instead decided to store their little gold rather than transform it into coins. As a result, silver was commonly employed in currency, especially as gold grew scarcer.

Paper money eventually replaced gold and other precious metal coinage. That is not to

suggest that gold has lost appeal; official gold coins such as the American eagle, Canadian Maple Leaf, and Swiss Franc continue to be created.

Money's History

Krugerrand is the currency of South Africa. Even while coins met all of the requirements of money, they might be inconvenient, especially for big transactions. Aside from the logistical difficulties of transporting huge amounts of metal coinage, this approach exposed the bearer to theft.

Paper money is thought to have originated in China since the invention of paper inevitably led to the development of paper money. Transportation of huge amounts of coins became increasingly difficult due to dispersed and expanding trade channels. Furthermore, the constraints of coinage became apparent when there was insufficient metal to make the currency required to maintain growth or when inflation necessitated the transportation of

more coins. Private transactions were the earliest forms of paper money, in which traders deposited their coins with their corporations, which then issued a promissory note based on this collateral. Governments finally realized the advantages of printing paper money, with widespread adoption beginning in the ninth century AD. The concept of the ministry of finance was institutionalized 500–600 years after paper money was first created, and governments eventually established themselves as the sole organization that could issue paper money.

The temptation of unrestricted production of money eventually led to catastrophic inflation in China, which hampered the growth of paper money. Following a particularly severe financial crisis, paper money was truly phased out for several hundred years. Even though Marco Polo reported on its use in the late thirteenth century, this full life cycle of paper money occurred in China before the Europeans even considered establishing their own paper currency.

Banks stored gold and silver for their customers, offering a receipt pledging repayment of the collateral on demand, and development in Europe followed a similar route. For the holder, these notes became demand notes, making them a perfect vehicle for expediting business transactions. The private Bank of Stockholm, in partnership with the Swedish government, issued the first official European note, which was backed by copper and silver assets. Similarly to the Chinese experience, too many of these notes were created, and their value plummeted when the bank was unable to meet the demand of depositors who wanted their silver and copper returned. Within ten years of its founding, the bank folded and was taken over by the government, while its founder was imprisoned. Until the seventeenth century, Sweden similarly prohibited the issuance of new banknotes.

Despite these obstacles, paper money flourished, despite the fact that banks were the principal issuers of paper money at the

time. The issuing of notes that reflected gold or silver holdings aided the rise of international trade in Europe during the thirteenth and fourteenth centuries.

6 Swammy, Swammy, Swammy, Swammy, Swammy, Swammy, Swammy,

At a repository, to be precise. Originally, these notes simply gave the depositor access to the precious metals, but they gradually evolved to provide the bearer access to the collateral. As the concept of several denominations gained traction, merchants began to seek multiple notes for greater deposits.

Banks began issuing banknotes secured by gold or other collateral held by them, resulting in the floating of more notes than were physically backed by collateral in their vaults. This was achievable because, unlike the present banking system, banks did not expect all note holders to demand security at the same time. Of course, as previously said,

the temptation to print too many notes exists. In such cases, as with the Bank of Stockholm, bank solvency becomes a concern for banknote holders. The Riksbank, or Swedish central bank, was founded in the aftermath of the early crisis in Sweden. The Riksbank was founded outside of the government, with the primary objective of ensuring price stability, due to the monarchy's involvement in the foundation of the Bank of Stockholm, which first supplied the endeavor with credibility. The Riksbank is the earliest and oldest central bank, and these concepts became the cornerstone of modern central banks.

While Sweden is credited with creating the first currency and the first modern bank, the Riksbank did not issue new bank notes for over a century after its founding out of caution. Other countries moved in to fill the hole and progress modern financial theories during that time. England played a key role in this chain of events, but it was out of necessity that its financial innovations were originally implemented. After a protracted

war with France, the English military was destroyed and required substantial sums to recover. Due to a lack of credit, the Bank of England was founded in 1694 to raise 1.2 million pounds to rebuild the navy.

The first standardized banknotes issued by the Bank of England were introduced over a period of several hundred years. Counterfeiting became rampant as private banks and the Bank of England both continued to manufacture notes, confusing the public as to which were genuine and which were counterfeit. While counterfeiters faced the death penalty, fake notes continued to be a problem, prompting the Bank Charter Act, which gave the Bank of England note printing monopoly rights. In 1862, the United States issued its first government note, which was declared legal tender, meaning it could be used to settle debts. These financial and payment system innovations have been widely imitated around the world.

We shall skip to some of the most key

advancements in currency that paved the path for crypto currencies later in this book, as we will discuss the development and role of central banks later in this book. Cryptocurrency has been around for a while.

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a natural progression of money digitization, which began with the introduction of the charge card. To provide some context, a charge card is distinguished primarily by the demand that the balance be paid in full by the end of each month. Diners Club, Carte Blanche, and American Express were among the first to develop electronic charge cards. Credit cards differ from charge cards in that they are effectively revolving credit, with less than full payment due each month and interest charged on outstanding amounts. Large merchants pioneered earlier types of credit cards, which evolved into general usage credit cards in the 1960s.

While charge and credit cards helped to familiarize customers with the digital payment system, users continued to access their funds via traditional bank channels. They needed to either get cash or write a check in order to pay these bills. By connecting our bank accounts to a card that contains our identifying information, the ATM pushed how we access money even further. ATMs were originally introduced in Europe in the late 1960s, and they swiftly spread throughout the developed world. The emergence of interbank networks enhanced our ability to easily access our money while also allowing us to access money outside of our domestic markets. Globally, there are an estimated 3 million ATMs.

We developed the debit card by merging the concept of credit/charge cards with the ability to access our own money. The first debit card was introduced in 1972, according to the Kansas City Fed. Other historians place the initial use of debit cards in the late 1970s as a replacement for using checks with merchants,

which was a time-consuming procedure of communication between a bank and a business. Debit cards, on the other hand, have been around for a long time, though their popularity did not really take off until the 1990s. Debit card usage has exploded in recent years, notably during the financial crisis, as credit got tighter and individuals grew more aware of their financial situation. Debit cards are currently used more frequently than any other non-cash payment method, including checks and credit cards, when evaluated by transaction volume. The growth of peer-to-peer payment systems like PayPal, Venmo, and Square, as well as the advancement of the payments system as a whole, all have an electronic component, yet each of these examples ultimately links back to a more traditional payment vehicle.

As e-payments become more popular, they are predicted to eventually surpass cash transactions. This has already happened in many ways, with cash accounting for only 1/3 of transactions and checks and electronic

methods accounting for the rest. Governments appear to be siding with one side or the other, actively attempting to restrict the amount of currency in circulation. The European Central Bank, for example, has stopped issuing €500 notes, despite the fact that huge denominations are still available.

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The notes are still legal tender. India demonetized its largest bills, the 500 and 1000 rupee notes, in a significantly more dramatic manner. These notes would be equivalent to eliminating the legal tender connected with them if converted into US dollars (USD).

In an almost instantaneous announcement, $10 and $20 bills were issued. As a result, Indian citizens, particularly the elderly and destitute, faced hardships as currency became

scarce and many of these groups lacked access to electronic forms of money. This trend is also gaining traction, with some groups advocating for the elimination of the $100 and £50 bills in the United States and the United Kingdom, respectively.

The significance of cash in tax evasion and other criminal actions is the major justification for a cashless society. There is $1.4 trillion of paper money in circulation in the United States, the majority of which is in high-value notes. This enormous sum compares to a regular family of four having $13,000 in cash stashed away in cookie jars or under mattresses. Other surveys, on the other hand, reveal that the average person only has $60 in cash. Cash critics believe that the disparities between these figures are exploited to enable tax fraud or other criminal activities. There is undeniably some truth to these statements, however the allure of riches is undeniable. Cash remains the primary mode of payment, as seen in Chart 1.1, with

the largest, albeit falling market share, according to San Francisco Fed data. When it comes to payment value, cash reigns supreme in the small-value arena, where it is used 60% of the time for transactions under $25.

While cash is money, as previously stated, money is much more. Cash, on the other hand, has some distinct and significant qualities inside the payment system that other payment methods cannot match. Cash, for the most part, is widely accepted, clears quickly, and cannot be hacked electronically. It is, however, subject to government intrusion, as Indian citizens recently discovered. Money can also be used as a national currency.

45 percent of

40% of the total

35% of the total

30% of the total

25% of the total

a 20% discount

15% of the total

10% of the total

5% of total

zero percent

CASH CHECK CREDIT DEBIT

Electronic Other

Switching from cash to electronic payments is depicted in Chart 1.1. (San Francisco Federal Reserve Bank)

Money's History

monetary and fiscal policies have depreciated the currency. Significant cash transactions can also be inconvenient, exposing the parties

to theft and/or heightened scrutiny when large sums of money enter the banking system. Finally, currency is anonymous, which is comforting in an increasingly connected and transparent world. Cryptocurrencies have emerged as a potential solution to the desire for anonymity in the payment system while still giving many of the benefits of electronic payment methods. Crypto currencies have also been designed to protect against debasement caused by government policies, as will be described in later chapters. However, before we get there, we'll take a look at some additional history and discuss some of money's more well-known flaws.

Gold's Function in Money

From the beginning of financial transactions, gold has always played a critical role in the evolution of money. When one considers that the oldest coins were valued primarily based on the amount of gold they contained, it is one of the most long-lasting kinds of money.

National wealth was frequently evaluated in terms of gold reserves, which had a direct correlation with European interest in discovering and conquering the new globe, often in order to obtain access to its gold treasures. The discovery of gold in the Western United States in the 1800s resulted in large gold reserves for the United States, which served as a lever for economic advances that contributed to much of the country's contemporary success.

Despite the metal's limited practical purpose, gold has achieved an almost legendary status. Its usage as a form of money was initially predicated on its non-corrosive nature, malleability, and beauty, all of which made it a good option for an early form of money. Other metals, such as copper or iron, rusted and hence did not serve as a store of wealth. Gold is also rather uncommon, giving it an advantage over silver in terms of retaining its value, but not so scarce as to stifle economic development. It's worth repeating that money is only as valuable as the value society

assigns to any given currency. As a result, gold became more valuable in the payment system as long as its value remained stable.

As a result, gold was instrumental in the development and adoption of paper money. Earlier iterations of paper money were simple deposit slips from financial institutions that held more difficult to move metal money. Governments retained the habit of maintaining gold and/or silver reserves to back their currencies when they became the major and then sole issuers of paper money. It was not unusual to see

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Bimetallic currencies, despite falling silver scarcity, resulted in currency depreciation and market instability for governments with high silver reserves but little gold holdings.

During the 1800s, the majority of developed countries began to use gold reserves to back their currencies. With the establishment of the gold standard in 1821, England was once again at the forefront of currency innovation, attaching its legal currency to gold stocks. Other countries gradually followed suit over the next 50 years, with France, Germany, and the United States all backing their currencies with gold reserves. The gold standard's widespread acceptance offered a foundation for countries to work together on monetary policies. The gold standard reached its pinnacle of influence between 1871 and 1914, a period marked by great increases in global trade, low inflation, and widespread cooperation among central banks to maintain external balances at the expense of internal balances.

The gold standard's main concepts are that an economy is adjusted based on the price of products and the flow of specie, which was often gold coins or bars. Consider the case of Country A, which has a trade imbalance with

Country B. This would force Country A to transfer gold reserves equal to the imbalance to Country B. A's currency stock would drop as its gold reserves shrank, whereas B's currency stock would increase. This would lower the price of goods in Country A, resulting in more exports, presumably to Country B. As a result of having more currency in circulation, Country B will experience inflation. The trade imbalance would reverse due to Country A's weaker economy and higher pricing for Country B's goods. This results in a reversal of gold outflows, a change in the amount of currency in circulation, and a return to equilibrium of the imbalance.

Our example of the gold standard is rather simple, but it can be used to demonstrate crucial components of the system. To begin with, monetary policy decisions are constrained since the amount of gold in circulation ultimately determines the amount of currency in circulation. Interest rates are significant because they should be utilized to

aid in the eventual movement of gold to restore external balances. Imbalances can also lead to gold-rich countries investing in weaker economies, improving productivity. Exchange rates do not fluctuate unless the amount of gold in the global system changes. Governments are somewhat helpless when faced with internal economic woes since their monetary activities are constrained by gold holdings. Inflation is generally kept in check, as is total world expansion, both of which are constrained by the finite stocks of gold.

It is no coincidence that the gold standard period ended in 1914, the same year that World War I broke out (WWI). For a long time, trade imbalances have been rising as serial deficit countries cheated on their commitments to assist external rebalancing in order to save their gold reserves. A sense of suspicion also constrained the amount of money that reserve-rich countries could invest in deficit-ridden trading partners. Economic troubles during WWI drove many countries to abandon the gold standard, as

they were obliged to manufacture money to fund war efforts.

Following WWI, many governments attempted to rebuild their gold holdings, but they were hindered by the much bigger monetary basis that the depleted gold reserves needed to support. There were multiple cases of hyperinflation in Europe, with Germany being a prominent example since its economic chaos planted the seeds for World War II (WWII). Because the currency in circulation was not backed by gold reserves, other countries were obliged to discount their currencies in comparison to pre-war levels.

The majority of attempts to rebuild a gold standard failed, leading to the creation of a gold exchange standard. Participating nations agreed to adopt the United States dollar (USD) and the British pound (GBP) as a benchmark for settling international transactions as they became the first reserve currencies under this scheme. This arrangement necessitated collaboration between the Federal Reserve Bank and the

Bank of England, which ensured other players of the USD's and GBP's ability to expand into gold. Despite the fragility of the system, countries opted to stockpile gold rather than retain reserve currencies.

The gold exchange standard was effectively abolished by the Great Depression, with some experts blaming the system for aggravating the severity of the depression. The failure of numerous banks in the United States during the Great Depression created a climate conducive to gold hoarding. To solve this issue, the US government enacted a number of key legislation that effectively made owning gold illegal.

The first was the requirement that all gold holdings be converted into Federal Reserve notes. Following that, all residents were required to convert their gold assets for Federal Reserve notes. Because it was illegal to keep any gold, these measures rendered it hard to convert holdings into gold. To hold its growing amount of actual gold, the US government eventually established the Fort

Knox deposi- tory.

With the onset of WWII, efforts to resurrect a gold standard took yet another step backward. The Allies didn't start thinking about how to restore the global financial system until towards the conclusion of WWII. 44 nations agreed to use gold as a monetary policy standard once more, but this time through the US dollar, in one of the most important agreements in contemporary finance. After WWII, the United States emerged as the world's most powerful country, avoiding much of the reconstruction issues that most countries encountered. In addition, the United States

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Between 65 and 75 percent of the world's gold reserves were owned by the United States, giving the dollar a significant advantage over other currencies in international trade. The Bretton Woods

Monetary Management System was formed as a result of a three-week meeting at Bretton Woods, New Hampshire.

Countries would agree to maintain fixed exchange rates that are tightly related to the US dollar under this system. Central banks would act if exchange rates moved beyond a 1% zone against the US dollar, either purchasing or selling their native currencies to restore the link. Bretton Woods established the International Monetary Fund and the World Bank to aid in the maintenance of the system.

In exchange, the United States would guarantee that the dollar could be converted into gold at a rate of $35 per ounce. To alleviate worries about convertibility, gold exchanges were established in the United States and London. As a result, the dollar has supplanted the gold standard as a means of resolving international imbalances.

This new method was considered as a

solution to get rid of some of the rigidity of a pure gold-based system while also avoiding some of the exchange rate volatility that arose during the gold exchange system's intra-war period. Bretton Woods' principal objectives were to promote stable currency rates, eliminate competitive devaluations, and promote global growth. The Bretton Wood accord was short-lived by all accounts, as it took over a decade to implement and weaknesses in the system appeared almost immediately.

In the 1950s, the United States, which had ran trade surpluses against the rest of the globe throughout the postwar reconstruction period, began to experience deficits. By the 1960s, dollar claims on gold reserves had outstripped real availability. Bretton Woods was essentially doomed by the Vietnam War, budgetary deficits, and excessive inflation in the United States during the 1960s and early 1970s. While Presidents Kennedy and Johnson tried to save the system, President Nixon announced in 1971 that the gold

window had closed and that the United States would no longer convert dollars into gold, causing the Nixon Shock.

Following the Nixon Shock, several agreements amongst the world's leading countries attempted to reinstate a fixed exchange rate, but they were mostly ineffective as floating exchange rates emerged. While the US dollar was no longer the world's official exchange currency by 1971, it had already cemented its place as the world's reserve currency, a position it still holds today.

Because after 1971, all currencies were no longer backed by gold, they all became fiat money on that fateful day. Fiat money is money that is recognized legal tender but has no value other than the guarantee of legal tender. Remember that the amount of money that may be produced is essentially limited by the amount of gold or any other solid underpinning for money. This is not the case with fiat money, which allows a government

to print as much money as it wants. Creating an excessive amount of money

Money's History

Its value may depreciate due to inflation, reducing your purchasing power. Excessive printing of money can lead to hyperinflation, in which the value of money might decrease hourly in the most extreme cases. The post-WWI German mark, post-WWI Hungarian pengo, and, most recently, the Zimbabwe dollar are some of the most extreme examples of hyperinflation. Inflation in these cases frequently topped 10,000 percent each year, with Germans using the mark for kindling wood as a result of its inability to serve as a store of value. Despite these extreme examples, global inflation has decreased since the financial crisis, despite large increases in fiat currency supply by the world's largest economies.

How to Calculate the Value of Money

The worth of a country's currency is today best determined by its exchange rate against the currency of another country. The US dollar is the world's reserve currency, and as such, it is the major pair member for practically all currencies, a status that evolved as part of the Bretton Woods agreement. For example, in order to ease a non-USD cross-currency transaction, two non-USD currencies are frequently matched against the USD first. In terms of how such values are established, currencies now float freely, are fixed to another currency, or employ a hybrid of the two, known as managed or filthy float.

The majority of the world's top economies allow their currencies to freely float, with the exception of China's regulated float. Currency supply and demand factors dictate valuation in a freely floating currency regime, causing exchange rates to vary continually. A global foreign exchange market is projected to trade

$5.3 trillion in currencies per day, and it operates virtually 24 hours a day, seven days a week. The advantage of a deep and active market is that valuations represent all current knowledge, and price changes may generally avoid severe market shocks except in the most extreme cases.

The underlying demand provided by international trade, as well as the speculative aspects created by traders hoping to profit from price volatility, affect the price of a currency in the foreign exchange (FX) markets. The most obvious source of demand is export of goods and services, as suppliers prefer to be paid in their own currency. To put it another way, the importer would need to sell their local currency to obtain the foreign currency in order to pay for the products and services. This increases demand for the currency of an exporter, raising its value, while decreasing supply (selling) of the other currency, lowering its value. However,

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Bilateral commerce may generate demand on both sides, and if items are exchanged equally, the trade balance is neutral, and no change in FX rates is required from a trade standpoint.

In practice, balanced trade is uncommon, with countries frequently running trade deficits or surpluses, sometimes in large amounts and over long periods of time. Changes in gold reserves as a result of deficit and surplus balances would dictate changes in money supply under a classic gold standard. Changes in the money supply would, in turn, increase or contract the different economies, resulting in times of higher prosperity in one country than another.

The residents of the surplus nation would be able to consume more, while those of the deficit nation would see their consumption reduced. As net importers return to balance

through a combination of cheaper exports and fewer imports, a good's prices and demand would be altered. Because exchange rates are locked to the value of gold, they will remain unaltered during this time.

Although the exchange rate modifies the supply and demand equation, floating currencies provide a similar adjustment mechanism. In our simplified example, the country that is a net importer has a trade deficit, whereas the one that is export-driven has a trade surplus. Focusing on the deficit country, the value of its currency falls as demand falls in comparison to the surplus country (as implied by their individual trade situation). The fall in the value of its currency makes its goods cheaper to the rest of the world, bringing the trade deficit back into balance. The surplus country faces the reverse problem, as its stronger currency makes its commodities more expensive and hence less desired. Its exports would drop as a result, contributing to the move's neutrality.

Ultimately, rising or falling exports affect a country's residents' wealth, which has significant political repercussions, rendering our simple example completely theoretical and unsuitable for establishing the value of money in the real world. Only if products and services are the only cross-border transactions that occur between nations will our basic example function. It also necessitates full substitution across goods, so that no country has a resource or competitive edge over another. Finally, it is assumed that the surplus country would never desire to possess the debtor country's excess cash. Of fact, all of these constraints apply in the actual world, which is why there are enormous trade deficits among many countries.

As seen in Chart 1.2, the United States has had a trade deficit for more than 40 years, with the imbalance with China reaching $400 billion yearly. Because China has opted to hold its excess supply of USD and reinvest it in US financial assets, the value of the USD

has not fallen and the value of the CNY has not risen as a result of this imbalance. As

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100

0

-100

-200

-300

-400

-500

-600

-700

-800

1970

1972

1974

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1978

1980

1982

1984

1986

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1992

1994

1996

1998

2000

2002

2004

2006

2008

2010

2012

2014

2016

-900

Chart 1.2: Trade Balances in the United States (in billions). (Source: US Census Bureau)

As seen in Chart 1.2, China's treasury securities holdings now exceed those of the United States.

It is the largest holder of US government debt, with a total value of $1 trillion.

The world's inclination to hold US dollars is linked to the currency's role as the preeminent reserve currency, with the USD being used to price the majority of the world's commodities. Holding US assets is enticing because of the US's economic strength and rule of law, which cannot be claimed for foreign countries. This helps to distort the simple trade-driven equilibrium mechanism

we discussed before, and it explains how a trade imbalance can not only endure for a long time, but even grow over that time.

The challenge of using commerce as the primary driver of currency rates is further highlighted by monetary unions such as the European Union. A monetary union, often known as a currency union, is a group of countries who agree to use the same currency. Individual country imbalances can continue far longer than if individual currency systems were retained, because the single currency should represent the union's overall performance. In the case of the EU, the disparity in performance between core and periphery countries is an excellent example of these imbalances, which contributed to the global sovereign debt crisis in 2010.

As one might expect, there are numerous factors that influence exchange rates, with inflation, terms of trade, interest rate differentials, outstanding debt, financial markets, government debt, and political

stability being just a few examples. While a currency's strength reflects the strength of an economy and its population, there is a point at which a currency becomes excessively strong. Exports are restricted in these circumstances, thereby raising the risk of a recession while also lowering inflation, which might be dangerous.

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have an effect on wage growth A government's response may be to try to depreciate its currency by participating directly in the foreign exchange markets or by lowering interest rates.

Central bankers have attempted to stimulate their economies by expanding the money supply and decreasing interest rates in response to rising unemployment and/or recession. Despite the fact that we are ten years distant from the financial crisis, some of the world's top central banks continue to pursue stimulative measures. As interest rates

in the world's largest economies were practically set at zero, central banks began an unprecedented asset accumulation process, which boosted the G-4 central banks' balance sheets to over $14 trillion, a 250 percent rise from before the crisis. While the subsequent growth in their respective money supplies has yet to spark inflation, substantial expansions in the money supply have been responsible for numerous episodes of excess inflation. The inability to regulate these external influences has become one of the most compelling features of crypto currencies, which are designed to avoid many of the monetary and fiscal issues outlined above.

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Tales from the Crypt: Crypto Currency's Birth

Richard Thompson, Marvin Loh, and Sarah Swammy

On December 17, 2017, the price of Bitcoin reached an all-time high of $19,000.00, driving the world into a frenzy over Bitcoin and digital money in general. Interest groups, media circles, and populations of individuals who had previously been absent from the conversation have now joined in, sending the world into a frenzy over the crypto currency phenomenon. Crypto currency is more than a fad, as many will find. It's a cutting-edge way of doing business that's here to stay.

The prospect of the approximately 2 billion

adults without traditional bank accounts discovering the virtues of crypto currency to perform everyday transactions through their mobile phone will drive this staying power. Reputable sovereign states, such as Bermuda, are developing the legal framework for a working model to domicile initial coin offerings (ICOs). Around 1.1 billion unbanked people in the world have mobile phones, accounting for around two-thirds of the unbanked population.

Cryptocurrencies are digital currency that are developed utilizing encryption technology and software programming. A domain that connects a network of peer-to-peer computers is used to create the digital coin. 1 These digital domains use the blockchain, which is an immutable, distributed database that serves as the accounting system or official book of records for all transactions. To verify transactions, the network employs a consensus mechanism.

The decentralization of the accounting system

distinguishes this paradigm. For security, the approach uses cryptography (including unique digital signatures) based on public and private keys and sophisticated mathematical formulas. 1 Peer-to-peer networking is a distributed design in which each node or computer in the network has the same privileges as the others. There's also no need for centralized computer coordination.

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algorithms. It is based on a decentralized peer-to-peer network of computers and "miners" who use open-source software to validate and irreversibly log transactions on a public distributed ledger that is visible to everyone on the network. Through transaction validation effort, this eliminates the lack of confidence between participants

on a public ledger who may be strangers to each other. The paradigm eliminates the requirement for a trusted, central intermediary, which is currently required in current financial systems. The outstanding software engineers, mathematicians, encryption experts, and engineers who collaborated to the creation of such a platform should be commended for laying the groundwork for future innovation.

It's worth noting that, while Bitcoin was the first crypto currency to attain widespread acceptance, it wasn't the first crypto currency. DigiCash, which was established by David Chaum and depended on a system of "Blind Signatures" to secure the privacy of users doing online transactions, was the first digital payment platform to acquire popularity. Chaum shut down DigiCash in the late 1990s because he couldn't get enough merchants to accept it so that customers could use it.

Beyond the group affiliated with the David Chaum camp and the circle of cypherpunks,

there are other contributions in this domain. Recognizing some of the industry's most well-known pioneers provides insight into the origins and direction of crypto currencies, as well as where they may evolve in the future in their current form or as derivatives (Table 2.1).

The birth of internet money was also influenced by legal and policy changes in the 1980s surrounding encryption. Prior to the 1980s, the principal users of cryptography were spy agencies. Because the internet is an open space with both private and public access, public key encryption technology has grown in popularity. This widespread use of has been aided by two publications.

Contribution Contribution Contribution Contribution Contribution Contribution Contribution Contribution Contribution Contribution Contribution Contribution Contribution Contribution Contribu

WikiLeaks founder Julian Assange

BitTorrent Bram Cohen

PGP 2.0 creator Hal Finney, Reusable Proof of Work

Applebaum, Jacob

Tor's creator

SSleay co-author Tim Hudson

SSL 3.0 co-author Paul Kocher

PGP 1.0 inventor Philip Zimmermann

Bruce Schneier is a security expert.

Author of well-known security books

"Warrant Canary" creator Steven Schear

Hashcash developer and blockstream co-

founder Dr. Adam Back Zcash creator and DigiCash developer Zooko Wilcox-O'Hearns

Open Whisper Systems by Moxie Marlinspike

TALES FROM THE CRYPT: CRYPTO CURRENCY'S BIRTH 1

The US government's "Data Encryption Standard" and Dr. Whitefield Diffie and Dr. Martin Hellman's "New Directions in Cryptography" set in motion the process of allowing the government to provide access and usage of cryptography for sectors other than intelligence agencies.

Bitcoin's Evolution

These contributions and events created the groundwork for Satoshi Nakamoto's return to Bitcoin, inspiring him to design a decentralized, immutable payment platform that is devoid of double spending and provides users with anonymity and privacy. Users preserve their holdings by providing an encrypted address protected by public and private keys, and then use the sophisticated network to transact and create new currencies via a software protocol.

Bitcoin vs. Dollars

With what can be interpreted as a ceremonious, symbolic, and successful launch of Bitcoin by one of its most prominent and mysterious pioneers, the infa-

mous but never discovered Satoshi Nakamoto, crypto currency achieved what would be the cyber-equivalent world's of landing a man on the moon, as the statement revealed and imbedded into the Genesys block of the blockchain "Chancellor on the brink of second bail-out for Banks." The timing of the Bitcoin debut appears deliberate, as it follows the near-collapse and demise of huge financial firms such as Lehman Brothers and Bear Stearns. There is a competing relationship between centralized payment systems controlled by banks and decentralized payments owned by no one but administered by a peer-to-peer network of computers, as sharp remarks like the Genesis block comment illustrate.

The comparison of crypto currencies to fiat currencies2 is inevitable. These parallels do not have to be contentious, with well-known banking executives declaring crypto currencies to be a "fraud," only to later ignore their earlier statements as they implement initiatives to incorporate the technologies that

power crypto currencies into their own corporate strategy development. That is why it is critical to keep technology apart from individuals who use it.

2 Fiat currency is money that has been declared legal tender by a government but is not backed by a physical product.

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which controls the technology Printing technology, which dates back to the early days of fiat currencies during the colonial period, underpins fiat currencies. It was the printing press's technology that allowed notes to be printed that were backed by the issuing colony's territory.

Fiat Money's History

A formal comparison of the growth of fiat and crypto currencies suggests that the

governance structure for crypto currencies might mature substantially faster in terms of compliance, governance, and control. In the United States, fiat currencies began when the colonies began printing money to settle debts owing as a result of the French and Indian wars. The Royal parliament had no authority, so colonies devised their own rules for delivering on the promises supported by these fiat currency. The currencies also resulted in a significant loss of money for the Royal government, since colonists used them to pay Caribbean merchants directly, bypassing the parliament's tax collection work-flow entirely. As a result, after a 30-year period, Parliament passed the Currency Act of 1754, effectively outlawing the use of fiat currencies and making it practically impossible for colonists to conduct business or repay any debt, public or private.

Cryptocurrencies and digital currency technology are now part of the global society and are having a major impact in poor countries. These stories show how alternative

financial mechanisms can improve the overall well-being of communities and groups of people, and they are a strong endorsement for the need for alternatives to traditional banking systems that primarily use fiat currencies as a medium of trade. The financial digital frontier, which was sparked by cypherpunks' efforts, is fast spreading and should be treated seriously by a wide range of people. Sovereign countries like Venezuela, for example, are looking into crypto currencies backed by oil as a solution to help them get out of the financial crisis.

When comparing the evolution of fiat currency with crypto currency, both monetary systems went through startlingly comparable eras. When one considers the history of fiat currencies, it is simple to conclude that colonists printed money with little actual value to pay for debts committed by the British and American colonies in order to weaken French influence in Europe and evict the French from the American and Canadian colonies.

In the late 1600s and early 1700s, war raged on both sides of the Atlantic, with the official end recognized by the Royal declaration of 1702.

The Dawn of Crypto Currency 21: Tales from the Crypt

1763. The French had admitted defeat, and the Native Americans who had fought alongside them during the French Indian wars had been defeated. The British government's treasury was drastically reduced. Collecting debt from the colonies and levying taxes were two methods of restocking the coffers. The colonists printed money to help them overcome and deal with their rising debt from the conflict.

There were three basic mediums of exchange in colonial periods and the early years leading up to the founding of the United States: commodity-based systems, species-based systems, and fiat systems. Colonists used the

staples from the land as currency for economic transactions in commodity-based economies.

Those that produced higher-value commodities, such as tobacco, had an edge over states whose territory did not generate such valuable commodities. Virginia was one of the states that benefited from these advantages, although Rhode Island did not. Species currency, a system in which gold and silver were utilized as the medium of exchange, was much wanted. Species, on the other hand, were sparse.

Using species to buy imports resulted in a flight of assets away from the product, depleting the supply. As a result of international variables limiting worldwide supply, species as a medium of exchange for business activities has tightened.

The constraints of commodity- and species-based monetary systems eventually led to a rise in the practice of printing money and the

establishment of the fiat system in the colonies.

Massachusetts pioneered this approach around 1690. By 1715, ten of the thirteen colonies had started printing money and utilizing it as a means of payment. It was so popular that economist Stanley Finkelstein summarized the benefits by saying, "Unless it is backed by species, it is a costless currency." The technique of producing money indiscriminately is troublesome.

Hyperinflation and a catastrophic devaluation of the currency result. That was the experience of British merchants and creditors at the period, who were paid in depreciated currency for goods and services that they refused to accept. The growing discontent of the British business community intensified pressure on the colonies to issue these bills of credit to cover debts, prompting Parliament to pass the Currency Act of 1751, which was later revised in 1764.

During this early stage of the colony's fiat monetary system, Parliament, which was the colony's central government at the time, allowed the colonies to use a monetary system other than the British pound. This carried on for around a 30-year period, during which the colonial fiat system operated without control or regulation. The colonies did not appear to have sought assistance from parliament or any formal counsel in developing rules of engagement for their alternative form of currency.

The colonists devised an alternative method of conducting business by printing paper notes and bills of credit with ink and a printing press, which was the state-of-the-art technology at the time. The colonists were able to evade the sugar tax by using fiat money, paving the path for the creation of money through technology, now that they were able to conduct business and produce revenues, even though this was regarded illegal by the imperial government.

For colonialists, the printing press was a liberating tool. The cypherpunks can use the

internet as the technology of choice to create an improved form of money, much as the early settlers could use ink. The colonists' and cypherpunks' motivations and spirits are similar, but their instruments are not.

It is safe to assume that Parliament or any other central authority was excluded from the fiat monetary system's original installation. This omission could have influenced the severity with which the Currency Act was adopted against colonial state administrations. It was forbidden for the colonies to print money. The practice was ended, and the colonies were no longer able to pay private debts with fiat currency or credit cards.

The Currency Act's announcement and enactment resulted in a tightening of the money supply, which the colonists strongly opposed. This measure was challenged by Benjamin Franklin and other colonial agents in London. Years had passed with no response from the imperial authority. Following years of lobbying by colonial

officials, parliament amended the Currency Act of 1764 to allow specific states, such as New York, to issue currency up to a specified limit.

Another unintended consequence of the colonies' capacity to create their own money was that they could now pay vendors directly, circumventing British taxes. Sugar, for example, could be purchased straight from the Caribbean, evading the British tax collector.

The imperial power was severely harmed by this diversion of monies from tax receipts. All of these issues became contributing elements in the Revolutionary War. The Sugar Act of 1764, the Currency Act of 1764, and the Stamp Act of 1765 were three important actions that were regarded great grievances. These acts ensured that policy would be enforced, and that violators would be tried by the Royal assembly rather than a jury of peers.

The Declaration of Rights, issued by the First

Continental Congress, enumerated colonial complaints to numerous acts of parliament, and proclaimed and called the Currency Act "subversive of American rights."

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What Impact Can Bitcoin and Cryptocurrencies Have on the Current System?

The government is directly challenged by technology. It may reduce some tax revenue streams for a while, as evidenced by the evolution of fiat currency. However, after carefully examining and adopting policies that would correct and align all perceived lost earnings, as well as safeguard the public from any hazards resulting from its usage or practice, the government will catch up.

Banks, on the other hand, are not in this situation. The banking industry's business

model is being disrupted by technology. The point of contention between crypto currencies and controlled fiat systems is this. Cryptocurrencies still have a long way to go before they can compete at that level, where daily transactions are measured in the low hundreds of billions of dollars and fiat currencies are measured in the tens of trillions. However, when the public becomes more aware and momentum builds, it is something that cannot be overlooked. Modern financial institutions have left the door open for alternative currencies, which appeal to vast segments of the public that are unable to participate in traditional banking.

The early period of flux in the evolution of the fiat system is another minor issue worth noting. The Anglo-Saxon landowners reaped the greatest profit from the fiat system. By 1790, the United States had a population of just under 4 million people. Enslaved people accounted for a little more than 14% of the population, or 690,000. The census excluded Native Americans, who accounted for

roughly 600,000 individuals in the continental United States, a significant decrease from the estimated 7 million people around the time of Columbus in 1492.

In the early days of its existence, fiat monetary systems excluded around a third of the population.

There were 1.29 million persons who got little or no help from the system. It might be argued that the current fiat system began with a significant population of underbanked or unbanked people. It's simple to see why the benefits of the digital coin, the inclusion principle, and democracy would appeal to a particular portion of society, namely the underbanked. Certain segments of society were clearly excluded from directly participating in the fiat monetary systems, whether intentionally or unintentionally, and a large number of people received little or no benefit, and this number grew significantly until the Civil War, when anticipated inclusion was seen as a promise.

The US population had grown to roughly 31,500,000 people in 1860, shortly before the Civil War began, and the number of persons enslaved represented 12 percent of the population, with a census count of slightly more than 3.9 million, which is a substantial figure. After the Civil War, there was a significant period of transition and potential. Abraham Lincoln's foundation of the Freedman Bank signified the aspiration of inclusion. a bank established for the purpose of

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It served to build a road of inclusion into the monetary system and capital markets of the period, which helped to relieve the problems encountered by formerly enslaved people. That symbol of optimism, however, became a source of sadness when Congress voted to shut it down seven years after Lincoln's

killing.

Because of the role provided to banks in administering the delivery of financial services to the consumer base, the fiat monetary system has the power to separate and exclude portions of society. The pre-Civil War and post-Civil War periods are crucial since there was no national banking system in place until Congress passed the National Banking Acts of 1863 and 1864.

States governed banks, and there was no uniform system in place. In 1846, the Polk administration began the trend toward a national system by withdrawing public funds from private banks and depositing them in Treasury branches. At the same time as slaves were being emancipated, the development of a national banking system was just getting started. There was no better time than shortly after the Civil War to build an inclusive policy and a national monetary system that allowed banks to grow and cater to all aspects of society.

The potential was clear, and there was no better time to bring the country together. The fall of Freedman Bank, which resulted in the loss of hard-earned money by the formerly enslaved, created a climate of distrust.

When it comes to the unbanked and those denied basic financial services due to policies of exclusion that have become endemic inside corporate banking institutions, crypto currency allows these issues to be brought to the table to heal and get rid of the glaring elephant in the room.

Cryptocurrencies have not been without their share of controversy, particularly in relation to the Silk Road issue. The Silk Road case emphasized the concerns of many who oppose crypto currencies, claiming that they provide a free-for-all for criminals and unlawful behavior. With the promise of ultimate anonymity and privacy free from any central authority, the crypto currency world would cocoon the so-called Den of Thieves. Some criminal merchants have the arrogance

to openly display bricks of cocaine on the Silk Road, making it an outrageous bazaar.

Allowing rampant illegal activity to be freely displayed in front of any prosecuting body cannot be justified by innovation. No civilization can exist with the kind of corruption that the Silk Road bazaar offered at the time, especially when there was no monitoring of any activity.

Ross Ulbricht did, in fact, build a system to support illegal activities such as drugs trafficking, assassination for hire, money laundering, wire fraud, and a variety of others.

infractions that could be prosecuted in federal court Ulbricht was sentenced to five years in prison, which he will spend consecutively. Two of the punishments were for life without

the possibility of parole. Ulbricht did not commit the alleged crimes; however, by providing enabling technology that used Bitcoin as a medium of exchange, the prosecutor and the legal system were able to use him as a poster child for the judicial system and for government officials to send a strong message that any violation involving crypto currency would be severely punished.

In most cases, severe prison sentences are enough to put an end to a movement. This dark cloud that hung over crypto currencies was a necessary corrective and a spur for greater innovation, as smart contracts were added to the already innovative and disruptive blockchain technology.

The ominous cloud of criminality was blown away by a collaboration of technologists, finance professionals, and legal professionals who created the framework of laws to prosecute violators who used crypto currency, as well as moving into advisory roles to assist entrepreneurs who use crypto currencies as

their primary business. With the collaboration, the crypto movement gained a strong crosswind, propelling it forward and increasing the adoption of crypto currency among cultural and retail sectors. Crypto currencies have progressed in the finance world, with some hedge funds adopting strategies based on the price volatility of Bitcoin and other major crypto currencies.

Understanding crypto currencies also entails learning why fiat and crypto currencies are used in general. People do not want to carry huge amounts of precious metals such as gold or silver around with them every time they want to make a simple transaction with a merchant since it increases the risk of thievery. This problem is solved by fiat and crypto currencies. Fiat, on the other hand, is still physical in some cases, particularly for the unbanked. When thieves learn the cycle of when actual checks are cashed at non-bank businesses they are forced to utilize, they are frequently robbed and put in danger.

As crypto currencies provide an alternative, the unbanked appear to be a growing demographic that will continue to benefit and establish economies that do not exist today under a modern banking environment. Examining the motivations for utilizing cash, with a focus on three main points:monetary unit of exchange

Save your money.

Make money by using money.

Swammy, S., et al., S. Swammy, et al., S. Swamm

Crypto currency will continue to develop in these sectors. Through the Silk Road's bazaar to mobile user experiences that will allow payment services from mobile phones, digital currencies will continue to grow in user experience. End consumers in rural locations will profit from using their phones and crypto currency for daily transactions.

Volatility is a big source of concern when it comes to crypto currencies as a store of value. As foundations onboard ICOs, one feature that will emerge is that the usage of data from the blockchain that supports the technology will become quite valuable. The utility of the tokens, together with the commercialization of the data, which will include transaction data, allows for the creation of a model in cooperation with the foundation, reducing volatility with some digital currencies.

To make money with digital currencies, you'll need to trade and have a professional experience and certifications. This is where things get risky, as some people get caught up in the hoopla around the price increases of crypto currencies during the last four years, such as Bitcoin, Ethereum, Litecoin, Ripple, and others. There are over 300 different currencies to choose from. Trading crypto currencies, like any other asset or security, requires expert knowledge, even if crypto currency is technically not a security. The

habits of "fear of missing out" and "pump and dump" that occur in the equity trading and FX space in crypto currency are easily lured.

Government regulators are actively developing legislative and operational frameworks to control these innovative digital technologies in order to protect the public. The first set of rules entails enforcing procedures around money service businesses (MSBs) in order to prevent money laundering and fraudulent conduct and safeguard public interests. Government agencies will hold workshops and hire consultants to develop internal knowledge banks on the subject, which will include hiring specialized consultants and providing training to help design effective working frameworks that will not stifle technological innovation while also providing a compliance structure to combat anti-money laundering (AML) and criminal activity.

Governments and banks are improving their talent pools and hiring individuals who are

familiar with the underlying technologies that enable crypto currencies.

Bermuda is an example of a sovereign government that has been proactive in creating laws and a working framework for defining crypto currencies and conducting a crypto currency business; the country has established a reasonable and stringent compliance program to deter any AML and money laundering activities.

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Premier David Burt meets with Digital AIR Technologies & Analytics' leadership team to discuss blockchain and crypto currency (Fig. 2.1).

Transactions that are fraudulent. Premier David Burt met with Digital AIR Technologies & Analytics' leadership team to discuss blockchain, crypto currencies, and artificial intelligence, as indicated in Fig. 2.1. Bermuda has developed a legislative framework that streamlines the ICO procedure in order to establish itself as the "Gold Standard" for ICO domicile.

Governments will play a key role in coordinating the interaction of centralized and decentralized payment networks. In no way is it feasible to replace the banking system. Central banks play an important role in any society's economic health. When central banking is not viable or available, technology and software have created an option for certain portions of society to augment or, in some situations, become their primary choice for a medium of exchange. Governments will implement compliance frameworks that do not stifle innovation as they gather more knowledge and find how digital currencies may complement the

formal monetary system of the sovereign state. Consumer protection against corruption, anti-money laundering, and fraudulent conduct, on the other hand, will not be jeopardized.

ACCEPTING CRYPTOCURRENC AS A TRADABLE ASSET ON THE SILK ROAD TO WALL STREET

Richard Thompson, Marvin Loh, and Sarah Swammy

Crypto currency trading became widespread in 2017, with some of the most incredible profits ever seen in the financial markets. By

all estimates, Bitcoin's 1300 percent rise in 2017 would place it among the best-performing asset classes ever, if it weren't for the even higher increases made by smaller and newer virtual currencies.

Interest in crypto currencies has risen in tandem with their value. As seen in Chart 3.1, Google searches for the term "Bitcoin" have risen at the same rate as the currency's value. It's no wonder, however, that the number of blockchain wallets more than doubled in 2017, reaching 20 million by the year's conclusion. Cryptocurrency owners also found it easier to use their coins, with the number of establishments accepting virtual money increasing by 40% to over 11,000 over the year.

This has undoubtedly resulted in an increase in business transactions, with blockchain.info reporting between 150,000 and 200,000 daily transactions in the second quarter of 2018. While these figures would clearly show tremendous development, they would pale in

contrast to Visa's daily transaction volume of 150 million. Ironically, crypto currencies' recent success and popularity are affecting their capacity to meet essential aspects of a successful currency.

More specifically, the volatility of cryptocurrency's value has an impact on its store of value, limiting its usage as a means of exchange. To put it another way, if a merchant sells an item for a certain amount of Bitcoin and the value of Bitcoin drops dramatically, the seller has effectively lost money.

When one considers the returns made by some of the top cryptocurrencies in 2017, it's easy to see why. As previously said, Bitcoin is worth a lot of money.

Crypto Uncovered, S. Swammy et al., https://doi.org/10.1007/978-3-030-00135-3 3

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20

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Bitcoin Price (LHS)

Bitcoin Google's search engine (RHS)

Bitcoin interest and value are charted in Figure 3.1. (Image courtesy of Google and Bloomberg Finance L.P.)

In 2017, there was a 13 percent increase. While impressive, this seems insignificant when compared to Ethereum's 8900 percent growth and Ripple's 36,000 percent increase. It's no surprise that merchant acceptance hasn't been stronger, given the dramatic day-to-day swings.

As a result, many recent crypto converts are more interested in the asset class's speculative nature than in promoting its use as an alternative currency. With well over 200 exchanges that facilitate the buying and trade of crypto coins, the process of purchasing crypto has gotten significantly easier in recent years. Because of its popularity, various exchange traded funds (ETFs) have emerged, allowing investors to invest in single

currencies as well as indices that track a basket of crypto currencies. Other ETFs monitor the underlying companies that supply blockchain services, and the Chicago Board of Exchange (CBOE) and the Chicago Mercantile Exchange (CME) provide a variety of futures contracts (CME). These days, there are a plethora of methods to invest in virtually all elements of crypto currency and related technologies.

Trying to Calculate Value

With crypto currency trading becoming one of the most common motivations for investors to possess them, determining valuation is an important part of the investment process. The creation of broad and liquid financial markets will go a long way toward determining the value of the different crypto currencies that are currently available.

Accepting Cryptocurrency as a Tradable

Asset on the Silk Road to Wall Street..active trading The price discovery process, in which buyers and sellers engage to determine a clearing price for financial assets, is one of the most important functions of financial markets. The market grows more vigorous, or "liquid" in market jargon, as more buyers and sellers meet in the marketplace. Better price discovery, narrower spreads, and higher trading volumes would all arise from a more liquid market. New information would be swiftly absorbed into pricing, resulting in reasonably constant (to a degree) market-neutral prices until new information about the security reached the marketplace.

Despite the enormous flood of new participants, what we have seen in crypto currency trading is far from the above characteristics of an efficient market. The difficulty of defining a basic value for the asset class is demonstrated by the fluctuation of prices, both higher and lower. The recent drop in Bitcoin has brought the currency's losses to 80% since the beginning of the year,

emphasizing the currency's speculative nature. This is partly due to the unusual position that crypto currencies hold in the investment world, as much of their evolution as a currency is yet unknown. In the meanwhile, its status as a virtual currency and/or emerging technology makes it impossible to apply traditional value metrics.

Bitcoin, for example, was created with the goal of creating a global virtual money. Currency strategists typically base their exchange rate decisions on factors such as currency account positioning, inflation, interest rate differentials, and a country's overall global status. Because none of those metrics apply and Bitcoin is still used for very little actual business, its value appears to be mostly influenced by speculative supply and demand pressures.

The broader business applications of Ethereum and its smart contract cousins run counter to Bitcoin's objective. To be fair, blockchain technology has recently sparked

just as much, if not more, attention than Bitcoin's virtual currency ambitions. With both existing and developing stakeholders embracing smart contracts and the flexibility provided by blockchain 2.0 technology, valuing these businesses should be handled differently than valuing a virtual currency.

However, as seen in Chart 3.2, the values of Bitcoin and Ethereum have moved in lockstep over the last year, indicating their mutual effect. Most of the larger crypto currencies are currently moving in lockstep, both upward and downward, as public perception of the asset class is the primary driver of prices.

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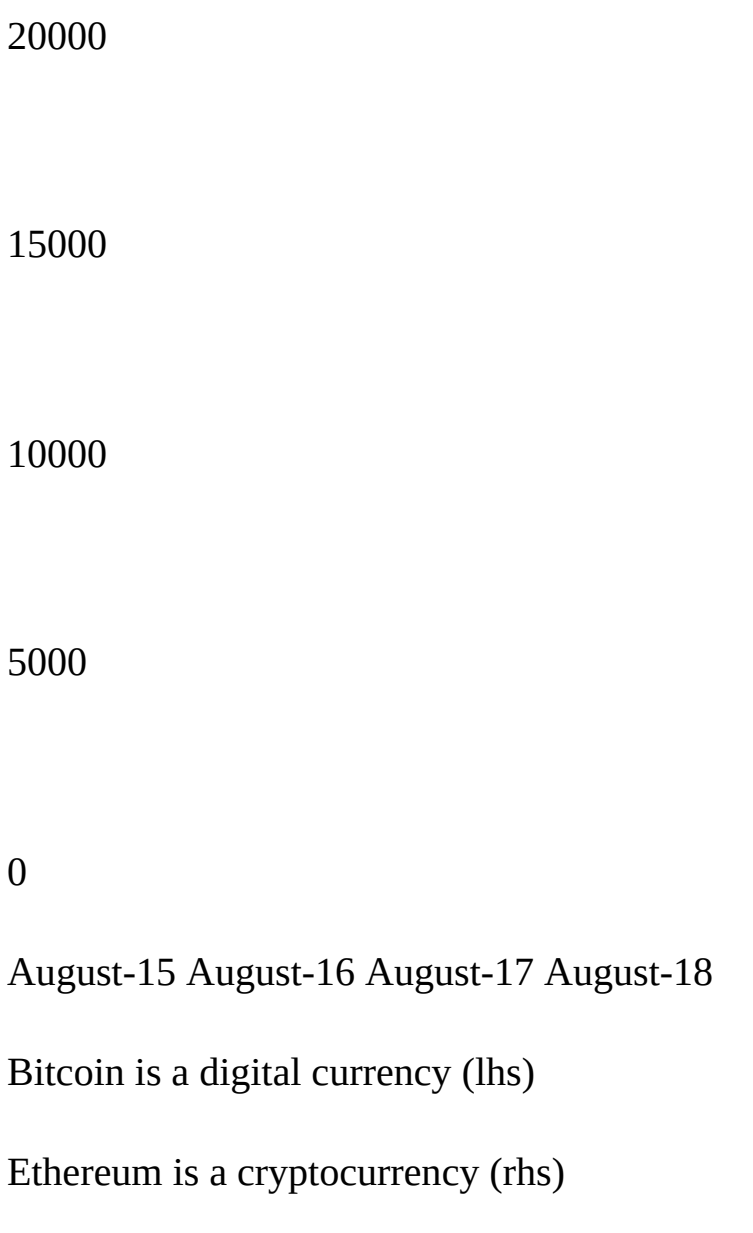
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August-15 August-16 August-17 August-18
Bitcoin is a digital currency (lhs)
Ethereum is a cryptocurrency (rhs)

Figure 3.2 Bitcoin and Ethereum are inseparable. (Data from coinmarketcap.com was used by the author.)

Important Developments in the History of

Cryptocurrency Trading

In the relatively brief history of crypto currencies, there has been no shortage of significant dates and events. It's easy to forget that there was just one crypto currency (Bitcoin) until recently, with the first transaction said to have taken place in 2010 (10,000 Bitcoin for a $25 pizza order). From those humble beginnings, Bitcoin has risen to nearly $20,000 per coin before falling to $4000, and there are now over 1500 crypto currencies to choose from. The stratospheric growth in all things crypto in 2017 propelled the market capitalization to over $800 billion by the end of the year, up from less than $20 billion at the start. While the market capitalization has lately dropped to just over $100 billion, additional technology developments and investor interest will keep the crypto markets volatile, giving opportunities for those who can weather the price swings. We've put together a summary of the most important headlines and developments in the crypto asset class, as

well as their implications for valuation:

June 2011: Gawker highlights Bitcoin's position in the Silk Road, paradoxically lending credence to the crypto currency's role as a medium of transaction, even if it was for illegal purposes. Following the article, the value increases by more than 80%.

Accepting Cryptocurrency as a Tradable Asset on the Silk Road to Wall Street..Mt.

Gox gets hacked for the first time in June 2011, affecting an estimated $8.5 million in coins and temporarily lowering the price of Bitcoin below $0.01. During the summer of 2011, Mt. Gox was taken offline for more than a week, and the value of Bitcoin plummeted by 80%.

March 2013: A software update proved incompatible with vast portions of the BTC network, prompting a hard fork back to the previous version that was scheduled to be upgraded. Several significant mining companies agreed to forego some produced

coins in order to allow the version downgrade, and there was little immediate impact on pricing, while BTC's value increased by 40% in the weeks following the incident.

Cyprus' financial crisis is staged by the country, the European Central Bank, and the European Union in March 2013. The impending collapse of Cyprus' banking system necessitates a bailout that includes a charge on higher-value bank accounts and international accounts kept in the country. The financial community rapidly recognizes Bitcoin's capacity to function practically outside of the regulations established by governments and central banks, as its value doubles in the week following the bailout.

With the arrest of the founders of Silk Road in October 2013, the website is effectively shut down.

Money laundering, computer hacking, and narcotics trafficking charges have been filed

against Ross Ulbricht, the company's owner and operator. The FBI seized 144,000 Bitcoins as part of the arrest, which were then sold in several blocks in 2014 and 2015 for $48 million. Following Ulbricht's imprisonment in late 2013, the value of Bitcoin dipped for a short time before rising to over $5 the following month. As an aside, 144,000 Bitcoins were valued over $2.7 billion at the end of 2017, which, while significant, pales in contrast to the value of the entire cryptocurrency market.

The US government is expected to run a $1 trillion deficit in 2018.

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The United States Senate and the People's Bank of China express support in November 2013.

By not declaring cryptocurrencies an adversary of the state, they gain some

credibility. The technology's unique nature has been acknowledged in U.S. Senate hearings, and the PBOC's then deputy governor (now Governor) indicated that people are free to participate in the Bitcoin market. Because of the strictly restricted exchange limi- tations placed on China's currency, the Renminbi, the country has become a hotspot of Bitcoin interest. Over the course of the month, the value of Bitcoin jumps from $208 to $1,140.

December 2013: Just as China had given the market reason to be optimistic, it had also given the market reason to be pessimistic.

It reverses course once the PBOC proclaims Bitcoin to be a non-currency and prohibits financial institutions from transacting with it. After peaking at $1,130, the value of Bitcoin plummets to $500 in the week after the revelation, never to be recovered for over three years.

February 2014: The start of 2014 proved to

be a difficult year for many people.

Several Bitcoin exchanges are suffering from hackers and/or external attacks. Mt. Gox was the most vulnerable, having been hacked for roughly 1 million bitcoin and forced to declare bankruptcy by the end of February. Bitcoin's value plummeted about 50% to a low of $450 near the end of the month.

Bitfinex, the world's largest cryptocurrency exchange by volume, gets hacked for 120,000 Bitcoin in August 2016. The price of Bitcoin has remained relatively steady in the aftermath of the news, despite the fact that its value had dropped by 15% in the days leading up to the announcement, suggesting the possibility of insider information.

Japan is the first country to acknowledge Bitcoin as a legal payment mechanism in April 2017. Japan has moved to the forefront in the cryptocurrency area, maybe as a result of the collapse of Tokyo-based Mt. Gox a few years ago, or as an attempt to play a

stronger part in the developing fintech space.

Accepting Cryptocurrency as a Tradable Asset on the Silk Road to Wall Street...debate.

While Bitcoin is recognized as a legitimate payment mechanism, it is not regarded as legal cash. Cryptocurrency holders in Japan, where they are viewed more like an asset than a commodity, have a lot of unresolved issues. Despite this, Bitcoin has made a comeback in 2017, gaining 30 percent in April to an all-time high of $2,400.

September 2017: China expresses dissatisfaction with the unregulated characteristics of cryp-tocurrency.

In early September, the government banned all initial coin offerings (ICOs) in the country, followed by the shutdown of all cryptocurrency exchanges later that month. This raised fears within the country's mining community that they would be next in line,

which happened at the start of 2018. In terms of market reaction, Bitcoin dropped 30% in the first 12 days of the month before recovering 70% of that loss by the end of the month.

With the approval of the US Commodity Futures Trading Commission, the Chicago Mercantile Exchange and the Chicago Board of Options Exchange announce and eventually issue the first Bitcoin futures contracts in October/December 2017. Coinbase reported 100,000 new customers after the CME announcement, indicating a spike in fresh entries into the market. In November and December, prices soared, with Ethereum up 5% and Bitcoin up 3% in the final two months of the year.

Market manipulation comes into light in May/June 2018, with the

The US Justice Department has launched a criminal investigation into whether traders employed spoofing or flooding to manipulate

prices. Professor John Griffin and Amin Shams of the University of Texas argue that price manipulation was responsible for at least half of the growth in bitcoin values in 2017. Bitcoin's value has been declining all year, with a 30 percent drop in May and June and a 70 percent drop from its peak in mid-December 2017.

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Coinrail, a Korean crypto exchange, was hacked in June 2018, resulting in the theft of $40 million in alt-coins. Although neither Bitcoins nor Ethereums appear to have been taken, the news caused both cryptocurrencies to drop over 10%, contributing to the market's pessimistic tone. Other cryptocurren- cies were stolen as part of this hack, but the value of all cryptocurren- cies was affected.

As the historical analysis demonstrates, there has been no shortage of good and bad news affecting the development and trade of crypto currencies in recent years. Investors have supported any trend toward wider acceptance

of crypto currencies as a currency or as a technology, according to some of the patterns that have emerged. Hacks and market manipulation have also stifled interest and pricing at various stages of the crypto development life cycle.

Most recently, price declines in 2018 have stifled broader investor interest and, in the short run, will likely stifle broader commerce applications. The crypto industry looks to have gotten more durable as a result of this, and while prices are down 80% from their all-time highs as of this writing, they are still over 4 times higher than where they started in 2017.

While many newcomers to the crypto market are attracted by the prospect of quick rewards, an extended period of calm is likely to be one of the finest things that could happen to the market. When it was understood that Bitcoin could be used as a medium of exchange, albeit initially in the unlawful domain of the Silk Road, some of

the most impactful developments listed above occurred.

The international, dispersed character of crypto currencies effectively addressed the problem of centrally controlled money during the Cyprus financial crisis, adding to their validity. The price volatility we've seen since 2017 has stymied future progress on this front, while also drawing increased, and fairly justified, regulatory scrutiny. There will probably be many more twists and turns in the crypto currency market, but investors should be aware that short-term volatility may have detrimental long-term consequences.

CRYPTOCURRENC TRADING'S NUANCES

The growing popularity of crypto currencies has made purchasing and trading your preferred virtual currency much easier. We've seen the number of crypto currencies grow from one a decade ago to over 1600 today, just as we've seen the number of crypto currencies grow from one a decade ago to over 1600 today.

Accepting Cryptocurrency as a Tradable Asset on the Silk Road to Wall Street..Similarly, the number of trading venues has increased.

There was just Mt. Gox in the early years, and its demise highlighted the risk to both the asset class's reputation and the individual investors who lost money. Over the last several years, the growing popularity of crypto currencies has resulted in a multifold growth in trading venues, with between 200 and 500 crypto exchanges operating internationally.

The Structure of Traditional Financial Securities Trading

In traditional financial markets, investors must open a broker-age account with a firm that offers the services and engagement that the investor seeks. If they just want to trade stocks for the lowest price, there are plenty of discount brokers to choose from. A full-service organization with a venerable name and reputation that makes one feel at ease may be required for a higher touch relationship. Regardless of where the initial order originates, each of these traditional businesses can acquire many of the same

products, such as stocks, at nearly equal costs.

The brokerage industry has a lengthy history of best practices and regulation. Customer accounts, for example, should be kept separate from the brokerage firm's account, shielding them from any financial issues. The failure of Lehman Brothers is a good illustration, because brokerage customers were unaffected by the firm's failure and had practically immediate access to their stocks and bonds. All brokerage accounts are also covered by the Securities Investors Protection Corporation (SIPC), which covers their assets if they are misused by the brokerage business, usually through theft or fraud. If the portfolio assets are within the SIPC guidelines, this insurance must restore the full value of the assets to the owner.

What Makes Trading Crypto Assets Unique?

While all of these safeguards and procedures

are often taken for granted when it comes to regular financial investing, they must be considered while selecting a crypto exchange. To begin, investors should understand that a crypto exchange is similar to the stock market. When you trade on a crypto exchange, you're taking the other side against counterparties on that specific exchange at the current exchange's prices. Traditional stock markets have created effective trading links, while crypto exchanges have not. When it comes to stocks,

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When prices differ between exchanges, you can buy a stock on the cheaper exchange and sell it on the more expensive one, creating an arbitrage opportunity. This would shrink the gap quickly, and pricing discrepancies for the same asset would vanish.

That isn't the case with crypto exchanges, where current market values for the same

asset, say Bitcoin, might vary by several percentage points, which isn't inconsequential when valuations are high. The differences are mostly due to differences in liquidity between exchanges, with larger platforms providing better price discovery as a result of higher activity. Bitfinex, bitflyer, bit- stamp, Coinbase, and kraken are now the top five exchanges for Bitcoin volume, though these listings fluctuate frequently.

It's no surprise that the top five exchange listings have addresses in four separate countries, given the international nature of crypto currency. Because most exchanges are fairly loosely regulated, investors should expect that choosing the right domicile is crucial. While we've included the larger exchanges, there are a slew of smaller exchanges that will boast reduced costs, more innovative pricing, greater trading opportunities, or any number of other advantages. However, if these exchanges are not based in your country of residency, major concerns, such as hacking, may be difficult to

rectify.

In crypto currency exchanges, foreign exchange of fiat money could be a difficulty. While it may be unthinkable to consider cashing out into traditional paper money, few landlords will accept bitcoin as a form of rent payment. If the exchange is located in a foreign jurisdiction and transacts mostly in non-domestic currency pairs, getting your crypto profits in your home currency may be more difficult. The same is true when it comes to opening an account, as each exchange has its unique financial requirements. Coinbase, for example, accepts credit cards, although many other exchanges do not. Others, such as Bitfinex until recently, only allowed coin deposits, requiring new traders to first obtain cryptocurrency from another exchange and transfer it to their account.

When determining jurisdictional issues, it's critical to choose an exchange that trades the cryptocurrency you're interested in. While

almost all exchanges will trade Bitcoin and Ethereum, emerging digital currencies are not guaranteed to be available on all platforms. While Ripple had the best year in 2017, one of the most popular exchanges, Coinbase, did not allow it to be traded. With dozens of new currencies appearing every month, finding the correct exchange for your trading habits is critical.

Following many hacks that have disrupted exchanges all around the world, the necessity for security is evident. Mt. Gox was the biggest, but it wasn't the only one.

Accepting Cryptocurrency as a Tradable Asset on the Silk Road to Wall Street..not prevent hackers from effectively bankrupting the company While Mt. Gox was early in the cryptocurrency life cycle, coincheck, which lost $500 million in coins in early 2018, was not.

Numerous smaller hacks have occurred,

many of which resulted in exchange closures and investor losses. Because there is no SIPC insurance for crypto exchanges, selecting a reputable company that keeps customer assets offline will help you prevent being hacked.

Hot wallets, or coin depositories that are connected to the internet and thus accessible to attacks, have been the target of many of the hacks. Investors should eventually take their coins offline and keep them in cold wallets, which are not connected to the internet and can be on a portable storage device.

Investing in Cryptocurrencies on Wall Street

Without physically owning digital currencies, there are other methods to participate in crypto currency trading. As previously stated, both the CBOE and the CME offer Bitcoin futures, which have witnessed a continuous increase in activity despite being modest in comparison to other more established financial products such as interest rates, equity indices, and gold.

A small number of ETFs that hold diverse interests in actual coins or futures contracts are also available. There are also new ETFs that invest in companies that use blockchain technology, however their top holdings are in companies like Microsoft, Overstock, and NVIDIA, who have embraced the technology.

As long as interest in crypto currencies continues high, additional ETFs will likely be created in the following year. The ability to connect into current brokerage accounts is a benefit of these products, though it should be noted that some brokers restrict access to these investments.

Governments are becoming more involved.

Governments from all around the world are responding to the growing popularity of crypto currencies. The borderless, anonymous nature of crypto transactions is one of its most enticing features. Organized crime, as

well as its usage for payments of criminal activities, were early adopters of Bitcoin. While the business parts of crypto have progressed greatly since those early days, estimates vary that a considerable amount of transactions are still driven by illegal activities, which governments will be anxious to combat.

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The government's possible interest in obtaining information lies on the other end of the spectrum into the cryptocurrency game A fully functional decentralized digital currency poses a substantial challenge to any government in its purest form. As discussed in earlier chapters, one of a government's most potent weapons is its capacity to manufacture money and declare it legal tender.

When the majority of the globe switched to fiat currencies, governments were able to print money at will, which had disastrous

consequences at times. Widespread adoption of a digital currency without government intervention would be a significant change in power, which many believe will not be allowed to happen unchecked. The introduction of crypto currencies by governments is one possible answer to this problem. The United States, Russia, Japan, Sweden, Canada, Venezuela, and Estonia are just a few of the countries considering launching their own crypto currencies.

Regulations emerge, and they are frequently welcomed.

There are several reasons why governments might want to regulate crypto currencies, as well as numerous routes through which they can do so. Because Bitcoin is the most well-known of the alternative currencies, governments frequently frame their statements and actions in terms of Bitcoin, even if their positions are likely to apply to all crypto currencies. Crypto is developing

swiftly and attracting regulators' attention, as evidenced by a discussion of legislation at a G-20 conference of finance ministers in 2018.

It remains to be seen whether regulation brings greater credibility and, as a result, wider use of crypto currencies, however further government inspection appears to be unavoidable. Only two nations, Japan and Switzerland, have declared Bitcoin legal tender, while many others, like the United States, the European Union, the United Kingdom, and China, have stated categorically that Bitcoin is not.

The three phases of the crypto value chain have been targeted for regulation: creation, trade, and use. Outside of the major established names, the rapid rise of alt-currencies accelerated tremendously in 2017. Initial coin offerings (ICOs) are commonly used to sell new coins, with Bitcoin and Ethereum being the most popular funding currencies. Ethereum was once thought to be the most successful ICO, having raised $18

million in Bitcoins during its initial coin offering (ICO) in 2014. After a few years, ICODATA reveals that 29 ICOs raised $90 million in 2016, indicating a reasonable growth curve. All of this, however, pales in contrast to the $6 billion raised through 800+ ICOs in 2017. Although new sales have slowed dramatically since prices have plummeted, the frenzy has continued into 2018, surpassing 2017 totals.

Accepting Cryptocurrency as a Tradable Asset on the Silk Road to Wall Street..While most reputable crypto products will find it difficult to succeed, there will be phony and scam offerings strewn throughout the many.

Concerns about phony ICOs have reached to the point where the Securities and Exchange Commission (SEC) created a fictitious ICO to demonstrate its point. As phony offerings grow more widespread, this is forcing the regulation of ICOs as a security. While the majority of governments throughout the

world remain cautious about ICOs, only the United States, Canada, Taiwan, China, and South Korea have taken a firm stance to either regulate them (in the case of the first three) or outright ban them (in the case of China and South Korea).

Another area of regulation is the exchanges, which serve as the primary trading platforms for crypto currencies. While the blockchain is thought to be unhackable, exchanges, which are frequently used as repositories for traded currency, are not. Hackers have gained access to a number of exchanges and stolen over $1 billion in cryptocurrency.

While it appears that any digital network may be hacked these days, governments are at least talking about ways to make transactions more secure. Japan has been at the forefront of many crypto concerns, and their strategy has been to regulate exchanges, as some of the most well-known exchange hacking occurred at organizations under their jurisdiction. China, on the other hand, has

become one of the most aggressive countries when it comes to banning financial speculation in crypto currencies. It outlawed initial coin offerings (ICOs) before cracking down on local exchanges, effectively forcing them to stop trading.

In the United States, the Securities and Exchange Commission (SEC) has been more involved in the crypto field, claiming that an ICO is similar to an initial public offering (IPO) and so susceptible to securities regulation. This might turn coins sold through an ICO into a regulated security, analogous to a regulated publicly traded stock. A news that the US Department of Justice is examining alleged market manipulation by traders in the crypto realm is another recent example of increased government engagement.

One of the most far-reaching debates could be a government's authority to outright prohibit the usage of cryptocurrency. The necessity to combat criminal activity, money laundering, and tax evasion is frequently

brought up in these debates.

Fears of losing control of a country's fiat currency system are, without a doubt, equally alarming. Discussion is typically sluggish to develop, and regulations may be misguided, as has been the case with government intervention in the crypto area. For example, the Internal Revenue Service (IRS) considers cryptocurrency to be property, and gains must be declared on tax returns. If crypto was used to make a transaction, this would essentially necessitate a capital gains payment.

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In addition, the IRS recently demanded user information from a San Francisco-based company.

One of the most popular cryptocurrency exchanges is Coinbase. Following a Federal Court order, Coinbase was forced to cooperate with the IRS request after first refusing. As a result, Coinbase will hand up

information on 14,000 users to the IRS, which is attempting to recover unpaid taxes on cryptocurrency trading gains.

While most nations continue to accept cryptocurrency as a payment method, China and Zimbabwe currently do not. However, the political nature of these activities is clear, since China is one of the more active countries in its pursuit of its own centralized digital currency, while Zimbabwe is battling devastating hyperinflation.

On a more practical level, given the decentralized and anonymous nature of the blockchain, payment regulation is debatable. As long as crypto currencies are adopted, more regulatory forays will be made, yet regulation may hinder their growth.

The Most Popular Trend in Cryptocurrencies is Initial Coin Offerings (ICOs).

The ICO, which emerged as one of the biggest movements in the crypto market in

2017, deserves special note. We'll start with the disclaimers, because these investments are highly speculative and are increasingly being regulated or downright banned in several nations. According to recent data, about half of all ICOs launched in 2017 failed, resulting in the loss of $100 million in invested funds. To be clear, the ICOs that did not make it to their first anniversary were on the outskirts, as the amount raised was a small fraction of the total of $5 billion raised in 2017.

Another cautionary note is the prevalence of outright ICO scams. Some scams are as simple as setting up a fund-raising website, plagiarizing another venture's white paper, and waiting for the monies to be given to the scammers. Many of these frauds are soon taken down, and the amounts raised aren't particularly significant, which doesn't help individuals who have lost money. Nonetheless, huge scams have occurred, such as the Pincon and iFan, which appears to be a Ponzi scheme that raised $660 million from

32,000 participants before collapsing. There were apparently offices in Vietnam that claimed to have operations in Singapore and Dubai in that case, indicating a really worldwide attempt.

The borderless and poorly regulated character of the cryptosphere is ultimately a by-product of some of these schemes' sheer chutzpah. Before we look at some of the investment components of ICOs, it's important to understand how capital is raised in traditional capital markets and how that process may be comparable to or different from that of an ICO. We'll begin by defining the difference between

Accepting Cryptocurrency as a Tradable Asset on the Silk Road to Wall Street..Funding from venture capitalists (VCs) and funds raised through an initial public offering (IPO). While there are no hard and fast rules on which companies belong in the IPO and VC buckets, there are periods in a company's development that make it more

suited for one or the other.

Although ICOs are frequently compared to IPOs, we find that they frequently have traits with crowdsourcing, venture capital, and IPOs. An initial public offering (IPO) is a method of raising cash for a company and/or allowing private firm shareholders to profit from their investment. A traditional firm in the midst of an IPO has often been in operation long enough for investors to attempt to assign a value to it. It is uncommon, but not impossible, for a company to raise funds through an initial public offering (IPO).

An IPO firm might be as young as a year old or as old as decades. As a result, revenues may be almost non-existent or already in the billions. A successful IPO is one in which the firm can excite potential investors about the company's prospects as a public corporation.

Registered brokers manage IPOs marketed to US investors, and there are very rigorous

limits about what can be said and committed at various stages of the sale. All US-based IPOs are regulated by the Securities and Exchange Commission, and the offering cannot proceed until the SEC declares the registration statement valid.

At that moment, the underwriters can begin accepting orders and determine the first offering price for the shares. The geographic distinction is significant because international stock offerings are not subject to SEC regulation unless they are listed on a US market. Many foreign companies list their shares in both their home market and the United States, allowing their shareholders access to the considerably bigger US equity markets.

Venture capital, on the other hand, is a private investment in a company. If a company is in the early stages of its life cycle, it may only have access to venture capital to fund operations, however this is not always the case. There are capital pools

focused toward early-stage investing in the venture capital market, while others attempt to fund more established but still evolving business concepts.

Angel investors, who give capital for concepts or very early stage firms, are frequently involved in the early stages of investment. Because the risk of early-stage investing is higher, VC investors will seek a larger stake in the company in exchange for funding. Crowdsourcing is a type of venture capital that allows entrepreneurs and businesses to raise financing from a large number of investors. In general, venture capitalists will be looking for a monetization event, such as an IPO or merger, where they may sell their shares of an investment at a better valuation.

It's worth noting that venture capitalists are frequently investment professionals that manage cash pools for institutional investors. As a result,

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To evaluate fledgling businesses and determine the worth of targeted investments, professional investors use a variety of techniques and relationships. IPOs are sold to a much bigger audience, and the SEC's responsibility is to ensure that prospective investors have access to sufficient information. Following an IPO, public companies must adhere to ongoing reporting requirements, and investment banking firms and other analysts frequently present their assessments of the company's performance. A public company's current valuation is determined by its stock price, but the value of VC investments is determined by the most recent round of funding.

According to the preceding description, ICOs frequently share properties with both VC firms and IPOs. Because many ICOs are still in the concept stage, they face many of the same risks as a venture capital investment.

An ICO is free to trade on a crypto market once it has been successfully established, and hence shares many similarities with an IPO. The requirement to thoroughly examine the business idea and trust the management team that is anticipated to make the offering a success is a constant for VC, IPO, and ICO investing.

ICOs provide an innovative alternative to fund-raising, despite the considerable risks. In fact, different indicators of VC funding for Internet startups are currently trailing sums raised through the ICO approach. Traditional VC channels are increasingly investing in crypto currency startups with the purpose of monetizing their capital through an ICO, blurring the lines even more. All of this suggests that ICOs will continue to be evaluated and potentially participated in by investors.

A good idea, well-prepared white paper, strong management and technology team, and broad enthusiasm in the idea from both the

technology and crypto communities are all common elements of successful ICOs. Investors are likely to identify projects where they may be a stakeholder and hopefully use tokens as a participant in the network, or simply bet on the tokens' appreciation, given the abundance of new uses. It's worth noting that the recent massive influx of funds into the ICO space has been focused on speculation, which has resulted in more scams and heightened regulatory attention. Overall, the promise of blockchain-based applications and flexible fund-raising will help to grow the ICO business in 2018 and beyond.

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What Do We Know About Cryptocurrency Investment Performance and Risk?

Introduction

Crypto money was first outlined by Nakamoto (2008), who described a digital payment system that did not rely on a third party and instead relied on a network of participants. Crypto currency has grown as a result of the underlying technology, known as blockchain. Tokens used in blockchain systems include Bitcoin and, more recently, various crypto currencies.

Despite the fact that Bitcoin is traded 24 hours a day, seven days a week, alternative crypto currencies began to develop in 2014. Since 2015, competing coins have existed, notably Ethereum, which runs on the

Ethereum network. As of July 24, 2018, Ethereum has a market value of $47.8 billion, which is only surpassed by Bitcoin's $140.1 billion market capitalization. 1 Ethereum coins are created through a mining network, similar to Bitcoins. The Ethereum network, on the other hand, functions independently of the Bitcoin blockchain. Ethereum is used as a payment system to pay other computers on the internet to fulfill jobs.

Ethereum is gaining traction as a platform for executing contracts involving complex financial transactions. A traditional financial transaction, such as settling a stock option or futures contract, entails two parties using a third party to handle the transaction, such as an established financial exchange or a bank (for over-the-counter transactions). In a standard financial transaction, however, the two parties pay a charge to the third party.

1 On July 24, 2018, at 10:59 AM EDT, these figures were collected from

https://www.cryptocompare.com.

Crypto Uncovered, S. Swammy et al., https://doi.org/10.1007/978-3-030-00135-3 4

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Ethereum sees itself as a way for two parties to conduct transactions on a shared network at a lower cost, with no constraints imposed by third-party middlemen, and with perfect security.

2 Established information technology and financial services firms, such as J.P. Morgan Chase3 and IBM4, are interested in using blockchain networks as alternatives to traditional financial exchanges and banks acting as middlemen, and the Ethereum network, with its promise of decentralized smart contracts, has piqued their interest. The non-profit Ethereum Enterprise Alliance was founded in 2017 with the goal of bringing together large corporations, academics, and

technology businesses to build on Ethereum's smart contract blockchain technology. 5

Other coins, in addition to Ethereum, have developed in the last three years as a result of "initial coin offerings." Coin offerings are a viable alternative to issuing stock or seeking venture capital funding for a firm. In effect, programmers raise funds by developing and selling their own crypto currency based on the Bitcoin architecture. The freshly minted coins are usually limited to use on a computing platform that the issuers are developing.

The market capitalizations of crypto currencies with market capitalizations of at least $1 billion are listed in Table 4.1. This requirement was met by 20 crypto currencies as of July 24, 2018. 6

We will review previous research on crypto currency pricing and returns, compare Bitcoin returns and risks to established financial assets, and evaluate returns and risk of

alternative crypto currencies in the remainder of this chapter. We also go into the ramifications of crypto currency exchange-traded funds, as well as options and future contracts based on crypto currency as the underlying financial asset. Finally, we offer some recommendations for further research.

Pricing and Returns of Cryptocurrencies: Previous Empirical Literature

There has been a substantial amount of literature on crypto currency pricing and returns since 2015. The goal of this study was to see if Bitcoin and other crypto currencies could be utilized as a hedge against more established financial assets.

2 https://www.ethereum.org

3 Quorum is described by J.P. Morgan as a "enterprise-focused" version of Ethereum. https://global.jpmorgan.com/Quorum

4 https://www.ibm.com/blockchain/

5 Entethalliance (https://entethalliance.org)

6 According to data acquired from https://www.cryptocompare.com on July 24, 2018, at 10:59 AM EDT.

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Table 4.1 Cryptocurrencies with a market value of $1 billion or more as of July 24, 2018, 10:59 a.m. Eastern Standard Time

Market capitalization of coins (in billions of dollars)

1 Bitcoin 140.1

2 Ethereum 47.7

3 Ripple 17.6

14.6 Bitcoin Cash 4

5 EOS 8.4

6 Stellar 5.6

7 Litecoin 5.0

8 Cardano 4.5

9 Tronix 3.7

10 Iota 2.7

11 Tether 2.5

12 Binance Coin (BNB) 2.3

13 Monero 2.3

14 Neo 2.2

15 Dash 2.1

16 Pai 2.0 Project

17 Classic Ethereum 1.7

1.7 Huobi Tokens 18 Huobi Tokens

19 NEM 1.6

20 0x 1.1

www.cryptocompare.com, viewed at 10:59 AM on July 24, 2018.

Stocks and foreign currency, for example. Furthermore, financial analysts have examined whether Bitcoin and other crypto currency assets are efficient, that is, whether the asset's values reflect all essential information.

Dyhrberg (2016) showed that Bitcoin may be used as a hedge against the stock market and the US dollar, making it a valuable asset for portfolio diversification. According to

Urquhart (2016), the Bitcoin market is inefficient, but it began to improve from August 1, 2013, to July 31, 2016. The Bitcoin market, according to Nadarajah and Chu (2017), is inefficient. In the Bitcoin market, Alvarez-Ramirez et al. (2018) discovered periods of efficiency followed by periods of inefficiency.

Cheah and Fry (2016) show that Bitcoin experienced speculative bubbles from July 2010 to November 2013, and that speculative bubbles are a substantial component of Bitcoin prices. As a result, Cheah and Fry propose that Bitcoin's intrinsic value is zero.

According to the volatility indexes of 14 developing and emerging markets, Bouri et al. (2017) suggest that Bitcoin is a hedge against economic uncertainty.

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Stock markets around the world are

developing. Corbett et al. (2018) discovered evidence of price and volatility correlations between Bitcoin, Ripple, and Litecoin. The price and volatility of the three crypto currencies, on the other hand, have nothing to do with the bond, gold, foreign currency, or stock markets. Bitcoin returns are positively connected to economic policy uncertainty, according to Demir et al. (2018).

Finally, Griffin and Shams (2018) and Gandal et al. (2017) look at Bitcoin trading activities. Between February and November 2013, Gandal et al. looked at trading on the Mt. Gox Bitcoin Exchange and discovered two distinct periods in which about 600,000 Bitcoins (BTCs) worth at $500,000 were traded.

Agents who did not pay for the Bitcoins were able to obtain $188 million. The USD-BTC exchange rate increased by an average of 2% over the second quarter.

On days when suspicious trades occurred, Mt.

Gox lost $20, compared to a modest decline on days when no suspicious activity occurred. According to Gandal et al., suspicious trading activity caused Bitcoin to rise from roughly $150 to over $1000 in just two months.

Griffin and Shams analyzed crypto currency data using algorithms and discovered that purchases of Tether, a crypto currency backed by dollar reserves, are timed to coincide with market downturns and result in significant spikes in Bitcoin prices. Less than 1% of hours with a high volume of Tether transactions are linked to 50% of Bitcoin's stratospheric climb and 64% of the ascent of other top crypto currencies. Tether, they claim, is used to give price support and manipulate the value of crypto currencies.

Returns and Risks of Bitcoin in Comparison to Traditional Financial Assets

We compare Bitcoin returns and risks, as measured by return volatility, to stock, bond, and gold returns and dangers. First, we'll look

at Bitcoin. For the period of July 19, 2010, to June 29, 2018, Bitcoin's daily close values were taken from CryptoCompare, www.cryptocompare.com.

A graph of Bitcoin daily close prices through time is shown in Figure 4.1. A plot of Bitcoin logarithmic daily returns is shown in Figure 4.2. Note the sharp increase in daily return volatility in early 2014, which reflects Mt. Gox Exchange's issues at the time. It's worth noting that Mt. Gox dealt with nearly all of the transactions.

In early 2014, 70% of the trades were completed.

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Figure 4.1: Daily Bitcoin closing prices from July 19, 2010, to June 29, 2018.

Figure 4.2: Daily logarithmic returns on

Bitcoin from July 19, 2010 to June 29, 2018.

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In June 2011, the Mt. Gox Exchange was hacked, and 25,000 Bitcoins were stolen.

After the stolen coins were dumped on the market, the price of Bitcoin plunged from $17.50 to $0.01 in an hour. Mt. Gox was shut down on February 24, 2014, after 850,000 Bitcoins went "missing." 8

The following daily data from the Federal Reserve Bank of St. Louis FRED database were used to compare Bitcoin returns to those of equities, bonds, and gold from July 19, 2010 to June 29, 2018.

The US Corporate Master Total Return Value Index from Bank of America Merrill Lynch;

The London Bullion Market's Gold Fixing Price in Dollars; and

The Wilshire 5000 Total Return Index is a stock market index that measures how well a company has performed over time.

The logarithmic daily returns of Bitcoin and the three financial market indexes are summarized in Table 4.2. Table 4.2 shows the logarithmic daily returns for the whole sample period, as well as subsamples from July 19, 2010, to January 31, 2014, and February 1, 2014, to June 29, 2014.

Table 4.2: Daily logarithmic returns summary statistics

The exhibition ran from July 19, 2010 until June 29, 2018.

Standard

Asset type

Mean Median deviation

Skewness

Kurtosis

Bitcoin 0.0054952 0.0021542 0.0770317 2.783746 80.15076

Gold −0.0000672 0.0001341 0.0098664 −0.7379136 10.47102

Equities 0.0005398 0.0007128 0.0092757 −0.5682937 8.285075

Bonds 0.0001636 0.0003162 0.0026274 −0.405708 4.525791

The exhibition ran from July 19, 2010 to January 31, 2014.

Standard

Asset type

Mean Median deviation

Skewness

Kurtosis

Bitcoin 0.0102524 0.0036697 0.0828311 0.1327075 10.44171

Gold −0.0000531 0.0006971 0.0118165 −1.040465 10.33724

Equities 0.0006647 0.0008644 0.0106603 −0.5213826 8.269166

Bonds 0.0002164 0.0003948 0.0029071 −0.4718331 4.539512

The exhibition ran from February 1, 2014, through June 29, 2018.

Standard

Asset type

Mean Median deviation

Skewness

Kurtosis

Bitcoin 0.0016651 0.0018637 0.0051599 5.984047 177.8209

Gold −0.0000786 −0.0001889 0.0079671 0.1921139 4.302291

Equities 0.0004399 0.0006334 0.0080014 −0.6376245 6.1505

Bonds 0.0001211 0.0002349 0.0023789 −0.3206363 4.051528

7 In June 2011, the Mt. Gox Exchange was the largest Bitcoin exchange. Harvey is the source for this topic (2016).

8 For a review of the Mt. Gox Exchange's difficulties in early 2014, see Vigna (2014).

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Table 4.3: Daily logarithmic returns correlations for Bitcoin, stocks, bonds, and gold from July 19, 2010 to June 29, 2018.

Bitcoin Equity Bonds Gold

Bitcoin 1.0000

Equity 0.0389 1.0000

Bonds −0.0062 −0.3181 1.0000

Gold 0.0504 0.0155 0.0459 1.0000

2018. The mean and median return data for both the total sample and the subsample periods show that Bitcoin beat stocks, gold, and bonds. The standard deviation of logarithmic daily returns was significantly higher than that of stocks, gold, and bonds. Although Bitcoin offered higher average

daily returns than other asset classes, the risk associated with it was far higher. Over the whole study period, Table 4.3 shows connections between the daily logarithmic returns of Bitcoin, stocks, gold, and bonds.

Not only is Bitcoin more volatile than the other asset classes, but its daily returns are not closely tied to the returns of the other asset classes, as evidenced by the low correlations between Bitcoin and the three asset classes. Table 4.3 supports the literature reviewed in this chapter's section "Bitcoin Returns and Risks Relative to Established Financial Assets," as the low correlations of Bitcoin returns with other assets confirm that adding Bitcoin to a portfolio of conventional financial assets can provide additional benefits diversification.

Financial Performance of Alternative Cryptocurrencies in Comparison

Table 4.1 shows a sample of crypto currencies with market capitalizations of $1 billion or more, which were used to assess the

financial performance of different crypto currencies. The final sample included crypto currencies for which daily price data was available between August 7, 2015, and June 29, 2018. The final sample included daily closing values for the following crypto currencies, with ticker symbols in parenthesis, collected from CryptoCompare, www.cryptocompare.com: Bitcoin (BTC), Ethereum (ETH), Ripple (XRP), and Litecoin (LTC) (LTC).

Line plots showing BTC, ETH, XRP, and LTC prices across the sample period are shown in Figures 4.3, 4.4, and 4.5. The prices of the four crypto currencies moved together throughout time, according to Figs. 4.3, 4.4, and 4.5, especially as prices of the four crypto currencies began a rapid ascent in 2017.

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Figure 4.3 shows the price of bitcoin from August 7, 2015 to June 29, 2018.

Figure 4.4: Prices of Ethereum and Litecoin from August 7, 2015 to June 29, 2018.

Figure 4.6 shows relative performance statistics for each of the four crypto currencies using line graphs. The line graphs in Fig. 4.6 show the transformation of daily data for each data series, with the value of each data series divided by the value of that series on August 7, 2015. This allows us to look at how similar dollar investments in each crypto currency performed over time.

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Figure 4.5: The price of ripple from August 7, 2015 to June 29, 2018.

Figure 4.6: The value of $1.00 invested in Bitcoin (BTC), Ethereum (ETH), Ripple (XRP), Litecoin (LTC), and the cci30 Index from August 7, 2015 to June 29, 2018.

ple time period Despite price reductions since their peak in early January 2018, crypto currencies have had significant price appreciation during the entire study period, as illustrated in Fig. 4.6. $1.00 invested in ETH on August 7, 2015, was worth $145.08 on June 29, 2018, and $1.00 invested in XRP was worth $56.63 on June 29, 2018. On June 29, 2018, a $1.00 investment in BTC was worth $22.32, while a $1.00 investment in LTC was valued $19.28.

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Summary statistics for logarithmic daily returns are shown in Table 4.4.

each and every one of the crypto currencies

The mean and median returns back up what the line plots in Fig. 4.6 show: ETH and XRP had the highest average daily logarithmic returns, while BTC and LTC had the lowest. Over the August 7, 2015, to June 29, 2018, sample period, the standard deviations of daily logarithmic returns indicated that XRP, followed by ETH, was the most volatile of the four crypto currencies. Higher average returns were linked to higher return volatility for particular crypto currencies.

The standard deviation of logarithmic daily returns is divided by the mean daily logarithmic return in Table 4.5 to rank crypto currency performance. This makes it possible to look at the average daily return per unit of risk (volatil- ity). According to Table 4.5, BTC outperformed other crypto currencies in terms of return to risk across the sample period. Following BTC, ETH was ranked first, followed by LTC and XRP.

The logarithmic daily returns of the four crypto currencies were evaluated for pairwise

relationships. The Pearson pairwise correlation coefficients between the four series are shown in Table 4.6. All of the daily logarithmic returns

Table 4.4: Daily logarithmic returns statistics for Bitcoin (BTC), Ethereum (ETH), Ripple (XRP), and Litecoin (LTC), from August 7, 2015 to June 29, 2018.

Asset type

Standard deviation Mean Median

Skewness

Kurtosis

BTC 0.0029382 0.0029609 0.0408234 −0.207124 7.093563

ETH 0.0047089 0 0.0806132 −1.195264 21.22295

XRP 0.0038189 −0.0017861 0.0942104 1.860641 23.94807

LTC 0.0027994 0 0.0590146 1.775621 17.84802

Table 4.5, based on daily logarithmic returns, the average daily return to risk ratio: August 7, 2015–June 29, 2018: Bitcoin (BTC), Ethereum (ETH), Ripple (XRP), and Litecoin (LTC).

Asset type

imply (1)

Ratio of return to risk (1)/standard deviation (2) (2)

Ranking

BTC 0.0029382 0.0408234 0.0720 1

ETH 0.0047089 0.0806132 0.0584 2

XRP 0.0038189 0.0942104 0.0405 4

LTC 0.0027994 0.0590146 0.0474 3

Table 4.6: Daily logarithmic return correlations for Bitcoin (BTC), Ethereum (ETH), Ripple (XRP), and Litecoin (LTC), from August 7, 2015 to June 29, 2018.

BTC ETH LTC XRP

BTC 1.0000

ETH 0.3483 1.0000

LTC 0.5698 0.3177 1.0000

XRP 0.1912 0.1322 0.2380 1.0000

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Four crypto currencies have a good relationship with one another. Among the four crypto currencies, the daily logarithmic returns of BTC and LTC exhibit the strongest pairwise association. The XRP daily logarithmic returns and the logarithmic returns of the other three crypto currencies have the poorest pairwise correlations.

Establishment of Cryptocurrency Exchange-Traded Funds, Options, and Future Contracts

Bitcoin and other crypto currencies are still in their infancy and, as previously stated, are characterized by high returns volatility. Investor interest in crypto currency, on the other hand, is prompting financial services businesses to look at the creation of retail crypto currency exchange-traded funds (ETFs), as well as exchange-traded options and future contracts with crypto currency as the underlying asset. These financial innovations centered on crypto currencies have drawn more regulatory scrutiny as well as fresh investor capital into the crypto currency markets.

The Securities and Exchange Commission (SEC) denied Better Alternative Trading System's (BATS) application to offer the planned Winklevoss Bitcoin Trust ETF, which would have allowed individual investors to acquire Bitcoin in the same way they buy common stock (Weiczner 2017). The SEC is concerned about the possibility of price manipulation and fraud. Despite the SEC's denial of BATS' application, the

Coinbase Exchange plans to provide a retail ETF that will be an index fund based on various crypto currencies whenever regulatory permission is received (Weiczner 2018). Bitwise has proposed an exchange-traded fund (ETF) that would monitor a portfolio of ten digital currencies (Rooney 2018). At the time this book was published, neither the Bitwise nor the Coinbase proposals had been approved by the European Commission.

The Commodity Futures Trading Commission (CFTC) has given the LedgerX trading and clearinghouse platform permission to trade and clear swaps and options digital currency. LedgerX currently sells Bitcoin options and swaps. 9 LedgerX intends to expand by trading Ethereum futures and swaps as of April 2018. 10 The Cantor Exchange received a donation in December 2017.

9 https://ledgerx.com/about, 25 July 2018.

10 https://www.coindesk.com/ledgerx-sees-7x-jump-in-options-trading-6-months-after-launch/ , retrieved

25th of July, 2018.

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The CFTC has granted permission to offer Bitcoin options contracts.11 The Cantor Exchange had not yet commenced trading Bitcoin options at the time of publication of this edition.

The CFTC granted the Chicago Mercantile Exchange (CME) and the Chicago Board of Exchange (CBOE) permission to trade Bitcoin futures contracts in December 2017.

12 The CME and the CBOE are both testing the waters with Bitcoin futures contracts.

Regulated derivative contracts on crypto currency are still in their early stages. They

have the potential to give greater liquidity to crypto currency trading as they grow in popularity.

Conclusions and Future Research Directions

To date, Bitcoin and other crypto currencies have had a brief existence. Although Bitcoin has outperformed traditional financial assets, it has also been accompanied by severe volatility.

There is a need for empirical study as Bitcoin and other crypto currencies, as well as linked derivative contracts, mature. The following are some of the future research needs:

The introduction of derivatives contracts on options is being investigated to see if it has an impact on the pricing and efficiency of Bitcoin trading.

The study of the pricing of crypto currencies in respect to regular financial markets.

The degree to which the values of particular coins are influenced by the pricing of other coins is quantified.

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TAKING CARE OF THE CRYPTO MARKET

Richard Thompson, Marvin Loh, and Sarah Swammy

Entrepreneurs who want to get into crypto currency will do so through an ICO (initial coin offering) (ICO). In general, ICOs feature a user community that contributes to the token or coin's perceived value by using it as a means of exchange for products or services supplied by the ICO network—or by exchanging the token or coin on a crypto

currency exchange. Entrepreneurs who dare to take on such an effort must design a structure of governance for the community to ensure their fate is not the same as Ross Ulbricht's. The early designers of digital currencies like Bitcoin were not very interested in participant management. The cypher- punks' works, which are credited with generating a body of work that served as the foundation and inspiration for Bitcoin, do little to solve the issue of participant management.

The chore of validating and managing the original identification validity of individuals was not the aim of the technology in their pursuit for a payment system that was fully independent of any central banking system or authority. To carry out such a task would appear to be in violation of the technology's original founders' privacy beliefs.

The issues that the early contributors were most interested in were figuring out how to keep privacy and anonymity through

encryption, confirming identify validity through the use of private and public keys, and avoiding double counting or counterfeiting. Other critical difficulties for launching a decentralized payment system included having a method that operated as a digital notary for transaction evidence and having an immutable and distributed database on a decentralized peer-to-peer network that served as the official books of records.

With the incredible collections of works of art, the original contributors were able to complete this huge undertaking of a decentralized payment system.

Crypto Uncovered, S. Swammy et al., https://doi.org/10.1007/978-3-030-00135-3 5

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cryptographers, mathematicians, and software engineers are among those who work in this field. The foundation and tools to play the

digital currency game were laid by a relatively tiny population of individuals of remarkable intelligence, some with humanitarian intentions of transforming society. Although there were various digital currency games before Bitcoin, it was Bitcoin that became the most popular and accepted by the general public. Referring to crypto currency in the context of a game allows for the introduction of the concept of participant management, as well as providing a framework for non-technical individuals to grasp the fundamental concept of digital currency in general.

Understanding the nature of crypto currencies begins with identifying the underlying inner game that is always played within digital currencies or Bitcoin. It's critical to understand that miners are competing to solve a complex problem known as the hash function.

The miner who solves the hash algorithm receives twelve additional Bitcoins. The

miner can be a single person or a collection of people acting as a single unit. For the winner of the hash function, twelve new Bitcoins will be assigned to only one wallet.

The general public would learn that the game is not as simple as it appears. “How do you receive bitcoin?” was a common query in the early days of Bitcoin, before Mt. Gox, the first exchange to go online to trade Bitcoin and other cryptocurren- cies. Bitcoin was always there, but it wasn't easy to use for people who didn't have any computer experience.

The early contributors who built the technologies that make up the Bitcoin.org network's basis were focused on creating rock-solid gaming tools and on who would play the game.

Any crypto currency faces a difficult struggle in becoming a legitimate currency. It is not easy to meet the essential requirements of being a medium of exchange and a store of

wealth. The general public does not understand how any of the core needs are met.

Bitcoin's Early Years

Let's have a look at how a transaction was carried out in the early days of Bitcoin. A command prompt was used to conduct transactions. It would be painful to use a command prompt to execute routine operations like paying for groceries in a store, paying for gas, or paying for a cup of coffee. As a result, gaining enough traction among the general people to honestly wish to use Bitcoin as a medium of exchange during those formative years was unthinkable. The contributors, on the other hand, showed a great deal of interest in the game's tools, cryptology, Merkle Trees for distributed databases, and ways for reaching a consensus.

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There was little or no mention of developing a system to control the conduct of and place limits on users of the technologies throughout this phase of making digital technology a currency.

Outside of software enthusiasts showcasing the technology's advantages and a tiny number of speculators betting that a marketplace would emerge and bring in a slew of new players, there weren't many people playing the game.

Figure 5.1 depicts the quantity of Bitcoins in circulation in the past and in the future. The expected form of the curve indicates that the amount of Bitcoins in circulation will approach 21 million asymptotically. When this chart is combined with the historical price chart, it shows the daily market value of Bitcoin, as well as the number of participants. The daily market chart depicts how Bitcoin is progressing toward becoming a currency. As more people use it as a medium of trade and new channels open up to make digital coins more accessible, users see a road for it to be classified as a currency.

Figure 5.1 shows the quantity of Bitcoins in circulation in the past and in the future.

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Developing a Bitcoin Benchmark Price

Within 18 months of the first transaction

between Satoshi Nakamoto and Hal Finney, three events occurred that accelerated the acceptance of Bitcoin as a viable consumer currency. New Liberty Standard allocates a value to Bitcoin on October 5, 2009, based on the cost of electricity used to generate or mine Bitcoin. They launch a service that allows users to buy and sell Bitcoin at a cost of 1309.03 BTC per $1.

New Liberty Standard, in a nutshell, established a benchmark for determining the value of Bitcoin. New Liberty Standard bought 5050 BTC from Sirius for 5.02 using PayPal in the next event, which was a business-to-business fiat to Bitcoin transaction. The third incident was a business-to-consumer transaction in which a pizza was purchased using jercos for $10,000 BTC, which was worth $25.

The initial tangible value of Bitcoin was set at $0.0025 per coin. Prior to those events, the transactions were limited to a small group of cypherpunks, software enthusiasts, and

speculators who believed that a new world would emerge from the digital realms.

These events were required to pave the way for Bitcoin to be recognized as a real money by the general public. Between 2009 and 2010, the number of people that used the coin and played the game was still quite limited, with most of the participants being software enthusiasts, special libertarian groups, and special interest groups like the March on Wall Street crowd.

The necessity for a participant management system was minimal due to the limited number of people who participated in the game. The world's central governments have far more pressing concerns than attempting to establish governmental oversight over what appear to be cult-like software aficionados attempting to make bogus payments to one another.

The originators of Bitcoin were unconcerned with who uses the coin and for what. Their

goal was to create an instrument that could transfer value and be recorded in a decentralized network, ensuring that the game's tools functioned correctly.

THE SILK ROAD IS A ROUTE THAT CONNECTS CHINA

The amount of participation might expand naturally at a slow or fast pace, with no time frame in mind. With the launch of Silk Road, however, Ross Ulbricht boosts the number of participants and has the network sipping from a firehose. He marries the unregulated, unmanaged environment of an open market with no oversight to an intrinsically validated market of computer experts and traders.

Managing the Cryptocurrency Market

With the debut of Silk Road, an e-commerce site in February 2011, participation levels expanded beyond organic growth, elevating the Bitcoin experiment from a game to an enterprise. Bitcoin had risen from a value of 0.97, just under a dollar, to 9.21 by the time Gawker published their report about the infamous site. The increase in price corresponds to a market size of $53,481,000, based on the existing volume of Bitcoin in circulation at the time of 5.8 million. Those numbers of participants and the scale of the market aroused the attention of law enforcement and government officials.

Even as the circulation size grew with mining, the incentive value remained low, with the monetary reward value of 50 Bitcoins valued at less than a penny each during the incubation year, when Bitcoin was perceived by the legal community as an overly ambitious game played among a niche group for pennies. As Bitcoin circulation

levels reach specific levels, the quantity of Bitcoins rewarded is cut in half. Bitcoin is currently worth $12.5 per transaction. The minimum reward value incentives are now significantly higher than they were during incubation. Even at the time of the Silk Road's introduction, the reward mining incentive value was substantial, at around $50 per transaction. Every four years, the amount of Bitcoins awarded is halved; as a result, the current number given is 12.5 after two rounds of halving from the initial 50. The price of a Bitcoin, on the other hand, has risen dramatically, with a monetary incentive value of over $100,000.00 per transaction.

Creating a Value Store

When it came to determining how Bitcoin could be used as a store of value during this time, the idea of it being a real coin was a stretch. Bitcoin's designers devised a means for transferring wealth as well as a

decentralized system for precisely recording historical transfer value. It is not the job of people who designed the tools to determine what the value is, which is a critical issue in terms of being a store of value. Speculators who started using Bitcoin in the early days after the original first transaction took on that job. The problem is getting the general public to participate in the game. Although it may look minor at this time to implement a participant management framework, it is critical to determine who is playing the game and set out the game's components.

The Bitcoin network is the first. Bitcoin.org is the home of the extraordinary technology that creates new Bitcoins or coins through mining. Miners attempt to solve a very difficult task called a hash in the Bitcoin game.

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hash function that is solved by using the

encrypted information from the previous node to determine the next node in the Merkle Tree. The winner receives 12.5 new Bitcoins and the next transaction block if they answer the problem. In the digital game, these miners serve as the notary. Let's have a look at who is currently participating in the game. They can fairly be referred to as the game's contributors or creators, as well as the proprietors or administrators of bitcoin.org. That's one of the groups. The speculators are the other group. The miners are the last group.

It was still a niche game at the time, with only a small community playing it in relation to the world population. At this point in the game, there is an implicit vetting process. The game could only be played by those who had the resources and patience to construct a Bitcoin client and use a command prompt to run a sequence of commands that linked a digital wallet to a transaction and provided a value to the number of units of money they wanted to buy or sell. Manually performing

this technique is really difficult.

The chances of an ordinary consumer of goods and services using this as a medium of exchange are exceedingly remote. The idea of digital currencies, such as Bitcoin, posing a threat to fiat currencies or the current monetary system is ridiculous. How would the general public react to transacting via a command prompt and determining their current balance by running a series of instructions over an antiquated terminal? During the years 2008 to 2010, the buzz created about Bitcoin among narrow groups playing the game would appear to be a waste of resources for any central government to try to manage these small niche groups.

Even as technology advanced and Mt. Gox's formal exchange went online to facilitate Bitcoin transactions, the number of people playing the game remained limited in comparison to the world population. Speculators pushing the price and market for Bitcoin at the time had the price at 0.01; with

the pool of Bitcoin capped at 21 million Bitcoins, the entire market worth would have been $210,000.00 at the time. What's the point of playing that game if you're banking on a future market that could drive the price up enough to make it a true store of value?

THE STOCK MARKET HAS AWAKENED

As crypto currencies gain traction as an accepted medium of exchange for day-to-day transactions, entrepreneurs who are building the businesses that will power these marketplaces face the challenge of how to manage onboarding of individuals into the marketplace in a way that satisfies regulators and government officials while also respecting participants' privacy concerns.

Managing the Cryptocurrency Market

that make use of the market The lesson learnt

from Silk Road is that marketplaces that include a network exchange and a digital payment system will be the platform on which any digital currency will be accepted as a crypto currency. It is unclear if Bitcoin or any other crypto currency without a marketplace is a currency, based on the core definition of a currency as a medium of exchange and a store of value. The fact that the currency is a store of value is not immediately apparent.

Digital currencies are, in fact, a payment and accounting system. Digital technology allows a unit value to be transferred from one wallet to another while preventing double counting and forgery. The first Bitcoin transaction, Satoshi Nakamoto delivering 10 Bitcoins to Hal Finney, demonstrated the effectiveness of a decentralized payment system and the Bitcoin network's initial marketplace. The obvious question is how much 10 Bitcoins are worth.

The network's accounting technology is

legitimate, but the value system is not. To set the value of fiat currency, colonists used land as collateral. This approach established a benchmark or reference point for the value of fiat currencies. And the gold standard evolved into a measure of the country's creditworthiness to which the fiat currency is given.

Bitcoin and digital currency prices are difficult to estimate using a baseline. Initially, the benchmark was predicated on the assumption that a perceived marketplace would emerge, with patrons using the digital instrument of value as the marketplace's medium of exchange. In the early days, cult-like enthusiasts would do the same thing as Satoshi and acquire Bitcoins at a very low price using a command prompt on a computer after building a Bitcoin client.

This speculative value assignment resulted in the creation of a synthetic store of value for Bitcoin. It was a proper medium of trade in that it became a perceived money due to the associated speculative value.

A primitive money was developed as a result of this scenario. Only technology-driven cultish fans would utilize the currency at that point in its development, thus participant management was overkill.

The average person was not going to the grocery with their computer and using a command prompt to do a Bitcoin transaction to purchase a loaf of bread. There was no utility at that point in the evolution of digital currency due to a lack of widespread acceptance. It was a struggle for crypto currency entrepreneurs to elevate digital currency adoption from cult to general appeal, allowing it to become an icon-like fiat currency. The value and symbol of the British pound, US dollar, French franc, and many other G20 currencies are well understood by worldwide markets.

Those countries that make up the G20 have currencies that govern their countries' markets and have taken decades to show their credibility.

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Establish their money as a worldwide value symbol How do digital currencies go through the same process as fiat currencies to obtain the same near-rock-solid impression of value? One clear strategy to drive transaction activity beyond the levels of cult users of the digital coin, as proved by Silk Road, is to develop an enticing marketplace and design a user experience that is straightforward for the everyday user in terms of transaction. Satisfying these two objectives establishes a standard for goods and services within the marketplace with a more tangible or defined metric as the object of value, allowing the coin to develop in value.

The demand for a management system that oversees the many sorts of users and how transactions are performed has increased as the amount of transactions and varied types of users participating in the marketplace drive the value of the currency. Even if the marketplace isn't governed by a central

authority, that doesn't mean it shouldn't be regulated by a marketplace authority that provides the platform's value-added services.

Owners of marketplaces will be held to central body norms and accompanying legal implications, as evidenced by Ross Ulbricht's harsh prosecution. Is it possible to start a business knowing you'll end yourself in prison? That outcome is nearly guaranteed if no governance or participant management mechanism is in place. The Silk Road case is an important example to remember.

At the very least, a framework that is clear in terms of how individuals or groups are onboarded into the network and how they are classified while within is required.

With increased pressure from law enforcement agencies and politicians to enforce anti-money laundering (AML) and know your customer (KYC) laws, any entrepreneur considering starting a business based on digital currencies should consider

the precedent set by the Silk Road case's sentencing and ruling. Silk Road is a case study that emphasizes the significance of exercising extreme caution when establishing a governance framework in the early phases of a crypto currency business. Silk Road has demonstrated that crypto currency adoption will occur through marketplace portals that offer goods and services that stimulate user trans-action activity.

The trading of the currency itself is a direct result of the portal's transaction activity. The owners of the marketplace are the direct target of the investigation, as evidenced by the details of the FBI investigation into the case. Anyone with a technical background knows that any sustainable digital currency business is made up of three tightly connected components.

Managing the Cryptocurrency Market

but distinct networks, which we shall go through in depth. The legal investigation, on the other hand, is limited to the marketplace hub's owner. Investigating the intricacies of the Silk Road debacle, which placed a pall over crypto and digital currencies, confirms this. It is clear that Ross Ulbricht created a user-friendly marketplace using the internet where vendors from a variety of industries could post anything their imaginations could conjure up and consumers could buy practically anything their brains could conjure up.

Given the lack of oversight or a method of control to prevent certain operations from taking place through the portal, Mr. Ulbricht's collapse resulted from this simplicity and practicality. Prosecutors and the judge went after the site's owner to the fullest extent of the law, using RICO-style legal structures to impose the harshest punishments.

The complaints of legislators like Charles Schumer, who were inspired by an article

published by Gawker in June 2011 that raised awareness about the site, bolstered law enforcement's harsh position. Individuals involved in narcotic trafficking routinely utilized the site to plan drug deals, and the blatant misuse of the site for criminal activities was too much for anyone to overlook.

With $1.2 billion in sales and almost a million consumers, the Silk Road website was the cyber underworld's largest black market, with a customer-friendly electronic storefront that exhibited bricks of cocaine as skillfully as Amazon shows books. This client encounter could have persuaded participants to believe that the site was a refuge for illegal conduct. Aside from illegal drugs, the site also acted as a marketplace for phony passports, driver's licenses, and other documents, as well as a marketplace for illegal service providers like hit men, forgers, and computer hackers.

The Silk Road was appealing to many

different sorts of entrepreneurs because of the absence of monitoring and the ability to make payments with very minimal fees. This was not only used by law-abiding citizens, but it also became a deception for those with criminal purpose. Ross Ulbricht's intention in founding the site was most likely not to engage in this type of activity. He was deemed guilty, however, because there was no oversight for individuals who used the site.

Ross Ulbricht was meant to be the fall guy, according to the FBI and prosecutors. Despite the fact that Ulbricht operated out of San Francisco, the case was heard in Federal Court in Manhattan. The trial, which began on January 13, 2015, sends a powerful message to the crypto world because it was held in America's financial center rather than the jurisdiction where the accused crime occurred. The case's prosecution hinged on establishing the identity of the site's proprietor, who was identified as Ross Ulbricht by law authorities. Ulbricht admitted

to establishing the Silk Road website, but claimed to have handed over authority to others shortly after.

Swammy, Swammy, Swammy, Swammy, Swammy, Swammy, Swammy, Swa

It was founded. Ulbricht's lawyers claimed that Dread Pirate Roberts was actually Mark Karpelès, who set Ulbricht up as a scapegoat. Judge Katherine B. Forrest, the presiding judge, refused to allow any speculative information about whether Karpelès or anyone else was behind Silk Road to be introduced into the case. Ulbricht's lawyers faced an insurmountable legal challenge as a result of Judge Forrest's hardline stance, which was exacerbated by FBI Agent Christopher Tarbell of the FBI's cyber-crime unit in New York calling Silk Road "the most sophisticated and extensive criminal marketplace on the Internet today." Mr. Ulbricht's destiny appeared to be sealed as he faced great pressure from all sides—politicians' outrage, the judge's tough

position, and FBI and former IRS officials' investigation work—all of which conspired to ruin him. Ulbricht was eventually found guilty of eight crimes linked to the Silk Road investigation. He was given a severe sentence of life in jail with no chance of parole.

During that time, legal authorities were casting a wide net to catch cryptocurrency entrepreneurs, which could have been due to the bad attention brought on by the public and political outrage. Charlie Shrem, Co-founder and CEO of Bitinstant, was another advocate for the advancement of virtual currency and the crypto business.

Charlie is well known as one of the founding members of the Bitcoin Foundation, a non-profit organization dedicated to promoting, standardizing, and protecting the usage of Bitcoin cryptographic money for the advancement and benefit of users all around the world. CEO Mark Karpelès was another member of this foundation who suffered major unfavorable press as a result of the Mt.

Gox Bitcoin exchange attack.

However, as a result of the bad and sensationalized publicity, the crypto currency market saw a flash crash, with the price of Bitcoin plummeting to below $1,000.

$110.0. However, the price quickly recovered, reaching a high of $200 only a few weeks later. This pattern demonstrated that, while illegal conduct seemed to dominate media coverage of crypto currencies and Bitcoin, it was not the primary driver. With the FBI auctioning off 144,336 Bitcoins for a total value of about $48 million, Bitcoin was officially recognized as a legitimate alternative medium of trade and currency for Silicon Valley and venture capitalists.

The cases against the creators of crypto markets from 2012 to 2015, with several of them obtaining prison sentences, serve as a warning to any entrepreneur daring enough to develop a firm around crypto money to put in place a governance framework or risk being

prosecuted. Who starts a business with the intention of going to jail?

When we look at Silk Road and crypto currencies in general, it's clear that Mr. Ulbricht figured out the formula for widespread acceptance.

Managing the Cryptocurrency Market

of digital currencies Until then, crypto currencies were more of a cult than a mainstream phenomenon. The road to mass adoption had not yet been paved.

To create a Bitcoin ecosystem akin to Satoshi Nakamoto's or Hal Finney's, you'll need a lot of technical knowledge and experience. Without any training on how to build a Bitcoin client, download the open-source software, build, compile, and successfully run the client without pulling out every strand of hair, the likelihood of a large population of

common computer users successfully building, compiling, and successfully running the client without pulling out every strand of hair is extremely low.

Using a command line for routine business transactions is a painful experience for an unskilled computer user. Only hardcore computer enthusiasts and cult-like groups with extremely principle-driven or ideal-driven cult-like groups would enjoy conducting daily transactions via a command line user experience.

By building a platform that permitted the widespread acceptance of Bitcoin or crypto currencies as a medium of exchange, Ross Ulbricht paved the path for the people to join in. His invention serves as a blueprint for the industry to follow, with the initial coin offering (ICO) serving as the foundation for crypto operations.

The current trend is to make a digital currency offering available to the general public through an initial coin offering (ICO).

The initial coin offering (ICO) or marketplace encircles a specific sector or company concept. The idea of generating a digital currency for no other reason than trade isn't particularly appealing.

Designing a marketplace that facilitates the use of products and services using a crypto coin as the value transfer instrument, on the other hand, has become quite appealing. The coin has an intrinsic store of value and acts as a conduit for the adoption of a crypto coin as legitimate currency because it has a recognized floor value within the given marketplace.

Creating initial coin offerings (ICOs) looks to be the way to go for mainstream adoption. Establishing the governance framework from the start would be prudent as we develop the core building components that make up an ICO. Trying to backfill a governance structure is both difficult and ineffective. Let's take a look at the Silk Road's composition to see why it was so successful. Silk Road made use of three interconnected

networks for different purposes (Fig. 5.2).

Silk Road was a client-facing portal or network that facilitated Bitcoin transactions by driving traffic.

It's worth noting that the only entrepreneur who received a prison sentence was the owner of the deal-making portal, not the exchange network or the payment network. It's a good idea to incorporate the governance structure before onboarding the first user into the network, even before the transactional work flow's deal commencement point.

Swammy, Swammy, Swammy, Swammy, Swammy, Swammy, Swammy, Swa

The three interrelated networks of the Silk Road are depicted in Figure 5.2.

Establishing a registration process for onboarding everyone coming into the network for any reason is ideal for meeting

minimal KYC and AML criteria. This registration process may appear to go against the digital network's privacy and anonymity ideals, but providing a value-added business service is all about compromise. Anyone who is in charge of registering a domain that acts as a deal-making interface to a digital exchange or payment network should have a method in place that identifies individuals or businesses functioning within the network.

When dealing with personal information from customers, cyber security must be considered. As a precaution, using a VPN (Virtual Private Network) to construct the network is a good idea. A VPN creates a secure connection between a consumer device and an internet server, preventing eavesdropping even from the internet service provider. Offering this level of privacy protection to customers increases their trust in the network.

The advantages of avoiding phishing and eavesdropping, as well as preventing data theft, make using a VPN to develop the site a

viable decision. When developing these value-added services, it's critical to include these extra layers of security.

It's also worth noting that anyone can use a crypto currency or buy digital currencies by opening an account on a cryptocurrency exchange and trading currencies with their digital wallet. Alternatively, you can get a build from Bitcoin.org and use it to create a Bitcoin client and conduct a transaction. The majority of customers will not interact through those channels.

ICOs are value-added services that allow ICO stakeholders to build a registration process to ensure compliance. It would be difficult to manage individuals or companies onboarded into the network on an individual basis as the network population grows.

Creating a generic set of categories to categorize the persons onboarded into roles is a more sustainable strategy. When presenting to compliance officers or any other legal

official auditing the network, these roles are critical. It is possible to design a simple set of rules engine for implementing KYC and AML methods using role management.

Add a functional con- text that permits some important components of developing crypto marketplaces or a registration procedure to illustrate our marketplace and registration process.

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The components of an ICO. We'll make a coin for a hypothetical pure dog breed. This coin will be known as the fortunate coin. The following are some of the conceivable jobs in this marketplace or ICO:

Portal Administrators—A company that registers a domain and manages the portal.

Initial Investors—The group that provides the site's and marketplace's initial seed investment.

Breeders of pure dog breeds—A breeder of pure dog breeds.

Canine Authentications is a service provider for canines.

Service provider for caning training

Buyer/Owner of a Dog

As a result, roles establish a comprehensive set of groupings into which any individual can be assigned during the onboarding process.

This publication is intended for a broad audience, to assist the non-technical reader in developing a working model, and to serve as a backdrop to introduce these government

management concepts and facilitate understanding, as well as to serve as guiding principles in the design of a marketplace with the bare minimum of regulatory and government officials' requirements.

MANAGEMENT OF PARTICIPANTS

Many people and bodies are involved in a social entrepreneurship organization. Benefits and services are delivered or received by different categories of participants. Each participant has their own set of characteristics and behaviors, which include information that is common to all participant kinds as well as additional information that is exclusive to certain participant types.

Let's look at Mark's "Lucky Canine Care" dog center as an example. From buying/adopting, training, breeding, grooming, walking, treatments, and so on,

Lucky Dog Care has an end-to-end business strategy. Pepper, Mike's white Dalmatian, is his pet. Mike wants Pepper, a two-year-old, to learn particular behaviors.

As a result, Mike approaches Penny, a Metro employee. Mark, Mike, Pepper, and Penny are the four contestants in this game. Each of them has a distinct personality and is a member of the Metro Social Enterprise. They all have the same set of information, such as Name, Age, and Address, but Pepper has some additional traits, such as Breed, Size, and so on.

S. Swammy et al., 74 S. Swammy et al., 74 S. Swammy

Mark wants to use a digital currency to operate his company. As a result of the increasing

Due to the increased pressure to enforce machine learning and KYC laws, any entrepreneur considering starting a business

based on digital currencies should develop a governance framework to manage all participants who use the digital currency network or marketplace to drive user traffic to the client-facing portal.

The harsh and draconian sentences handed down in the Silk Road and other crypto cases prosecuted in 2014 are a testament and a stern warning that law has a long and heavy arm that grinds as legislators around the world work diligently to figure out a legal framework for crypto currencies, and they will always rule heavily against money laundering and KYC (Fig. 5.3).

Through a successful intake procedure, each member should have a predetermined engagement in the organization. Individuals' rights and values should be governed and protected through systems or domain platforms. The following should be the main building pieces of participant management at the mini-mom:

Management of roles

Entitlements and Actions

Activities and Events

Metro Dog Training Center (Fig. 5.3)

Management of roles

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A well-defined role should be assigned to each member in the system. Role management enables the specification and entitlement of resources that users in your application are permitted to access, as well as the management and authorization of all individuals using the domain. Individual users can be managed as groups and roles, such as admin, customer, member, and so on, thanks to role management.

The administrator can create access rules in

your application after the platform has generated roles. In our previous example, Mark will set himself up as the system's owner or administrator, Mike as a customer, Penny as a staff member, and Pepper as a member. Multiple roles are available to users. Mark, for example, can serve as both an owner and a system administrator (Fig. 5.4).

The primary goal of creating roles is to make it simple to manage access rules for groups of users. Users can be created on the portal, and administrators can subsequently give roles to them. All system resources can now be restricted to only authorized users. Administrators can create rules that allow or disallow access to restricted resources. When a user tries to access a restricted resource, an error is displayed, and the user's behavior should be noted for auditing reasons.

Now, in the context of blockchain and, more especially, crypto currencies, management plays a critical role. When we talk about roles in crypto currency, we're talking about utility

tokens, which are designed to power your company transactions through a different method of exchanging value.

Figure 5.4: Roles in the Dog Care Industry

S. Swammy et al., 76 S. Swammy et al., 76 S. Swammy

It is critical for your business to understand who has custody of your tokens and how much of your circulating supply is in circulation. The platform requires a thorough book of records in order to keep detailed transaction and holding information. Only by customizing a token regulated by the underlying principles discussed in the previous section can the platform achieve this.

Role management is one of these guiding ideas. The payment and accounting sides of crypto currencies are quite secure thanks to consensus management and blockchain, but

the outlook is pretty bleak when it comes to participant governance. There is currently no specific rule that governs the flow of digital currency. To put it another way, values are transferred from one person to another via an electronic platform powered by miners and enormous computers all over the world, but there is very little validation and traceability to show any sort of oversight in economic activity.

Based on the volume of trades that occur inside their eco-system, many utility tokens that exist now are in an extremely premature condition. The majority of it is fueled by day traders on various cryptocurrency exchanges. Let's use our Lucky Dog Center as an example to demonstrate role management.

Mark is launching a new Utility coin named "LUCKY" for his company. Customers can purchase the token from Mark for a set price based on its intended use. Mark executes a KYC procedure using a registration workflow to identify and authenticate domain members

before anyone can buy a token. The tagging of a person to a role is the first and most important stage in role management. He or she will receive varying rights in Mark's company depending on the function.

Mark can only confirm the source of cash collected during the token sale through the KYC procedure, which involves verifying each buyer's identity and residency. This procedure is required not only by governments and regulators, but also by the huge firms, banks, and public organizations that the Lucky Dog Center is bringing into the data trading market. Individuals will walk through an information gathering gateway to complete the registration procedure, which will capture basic identification such as personal information, address verification, electronic wallet address, and primary banking information.

The verification stage of the workflow follows the capture of the minimal information required for KYC. Potential

network participants are asked to provide or upload papers that will be utilized as resources by network officials to conduct a background and verification check.

Users obtain access to the system after completing onboarding and are now ready to purchase LUCKY tokens. To begin, let's assume $1 can get you 5 LUCKY tokens. Mark has defined various jobs in his company and a set of principles for each role in order to implement governance.

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Figure 5.5: Data on the circulation of DOG tokens

His DOG token was wrapped around him. The first concept Mark seeks to apply is the control of the DOG token's circulation among various players in the system. He has the ability to create new roles and route token

circulation according to his company needs. Figure 5.5 shows an example of the DOG token's holding information.

Another key component of role-based participant management is that it can assist in determining who is accessing the network, how they are accessing it, and from where they are accessing it, and then applying policies to govern that degree of access. For example, the policy for granting access to staff members differs from the policy for granting access to customers to your network.

Penny, in our case, will have far greater system access than Mike, who is a consumer. This entire process is automated and takes place in real time. It is not visible to the user. There is no end-user involvement. They are completely unaware of what is going on.

ENTITLEMENTS AND ACTIONS

After you've defined the roles, the next step is to specify the actions that each role can carry out. Actions are business logics that include a variety of decisions that result in a state change for the entities concerned. Mike making an appointment for Pepper is a straightforward example in our situation. Mike is able to carry out this activity because he is in the "Client" role (Fig. 5.6).

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Figure 5.6: Role-based actions

Figure 5.7 shows the dog-care business process.

Several actions are established in the system and assigned to suitable responsibilities, similar to scheduling an appointment. Now the system has a foundation for entitlements, ensuring that users with certain roles are authorized to execute specific tasks. Let's take a closer look at an action flow to see how entitlement plays a key part in managing the business process (Fig. 5.7).

Both dog owners and service providers are required to complete a thorough background check and role tagging in order to be included on the LUCKY platform. Dog owners can look for service providers, and service providers can look for suitable career opportunities. Before requesting a service, dog owners will need to obtain a particular number of LUCKY tokens, which they may purchase on the same platform at a market

price dependent on demand and availability.

Managing the Cryptocurrency Market

Let's have a look at the actions and entitlements of the LUCKY platform as a blockchain-powered digital marketplace. Every transaction that takes place on the platform should have a monetary value attached to it. As a result, the LUCKY platform has a notion of entitlement that is linked to activities (Fig. 5.8).

Customers having suitable entitlements can take the actions that are allowed. Any user with a FREE membership can only use five services per month and must have at least ten LUCKY tokens in their account. Premium members are platform regulars who schedule appointments for their dogs with various service providers on a regular basis. Other dog foundations and NGOs can join the professional membership to use the platform's high-volume transaction capabilities.

More information is collected during KYC as their membership level rises, and transactions are audited. This approach will ensure that traffic in the system is managed, and the company may build the necessary level of contact with customers to meet compliance and regulatory standards (Fig. 5.9).

Customer membership (Fig. 5.8)

Fig. 5.9 Membership of service providers

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There is service provider membership, which is similar to customer membership.

A service provider will be able to participate in the system based on his or her entitlements. Again, free membership is for first-time users who want to check out the system and do not require much compliance, but premium and professional memberships are for service providers who are serious

about their business and want to grow it using the LUCKY platform. According to the membership level, Mark's company can provide for the appropriate compliance and regulatory needs.

In a digital currency paradigm, the major goal of actions and entitlements is to perform adequate compliance and regulatory procedures. All of the topics presented in this section apply to any firm looking to incorporate digital money into their operations. Due to the unfavorable attention brought in by the public and political outcry, legal authorities are casting a wide net for crypto currency entrepreneurs.

The industry's current key trend is to serve the public through an ICO or marketplace. Creating a marketplace that allows people to buy and sell goods and services using a crypto token as the medium of exchange is priceless. If a crypto coin has a perceived floor value within a specific marketplace that serves as an intrinsic store of value, it helps

pave the way for its adoption as legal tender. Establishing a compliance framework early in the marketplace design is better for wisdom. Actions are entitlements that are one of the essential components for a stable marketplace, as detailed in this section.

Activities and Events

It is critical to define all conceivable scenarios in the area of the platform being produced while building a governance structure. It's important to note the slight variations between acts and events. Users conduct actions, which are only initiated when the user performs an action, such as placing an order, validating a user, or transferring a token to another user. Roles are assigned actions.

Events are platform or system-generated outputs that are a result of a user activity and define the conditions under which specific activities must be completed. When a user

tries to place a buy order, for example, the platform checks to determine if there is sufficient account holding to place the order. When the platform realizes there isn't enough money in the account, it generates an insufficient fund event. The system may perform a set of tasks as a result of these events.

Events can never be triggered directly by the user. Events, on the other hand, are platform- or system-defined, and are triggered indirectly as a result of a conditioned response to something.

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Figure 5.10: Requirements for compliance

an action taken by the user Participants' real acts are referred to as activities. It's critical to keep track of each action taken by a participant in the activity list. The activity list is the area where all of the actions made by participants are tracked. The platform records

whether a user action is in compliance or in violation.

The goal of tracking events and actions is to capture the current state of the platform and provide a snapshot at any point in time. Any compliance reporting platform requires audit reports. All of the components needed to complete compliance reporting should be in place. Reports can be produced to generate participant kinds, provide daily activity details by role, report on generated violations from events, and summarize participant activity over any time period. The framework is robust enough to detect any malicious activity or unauthorized use. Five important compliance categories are depicted in Figure 5.10.

The five categories represent criteria imposed by a variety of regulatory agencies. To ensure market integrity and customer confidence, security regulatory agencies prioritize consumer protection. Federal and state laws, multiple asset trading restrictions, banking

legislation, and many other government entities that demand consumer and monetary system protection require these categories. Money service businesses (MSBs) have risen to the top of the regulatory priority list.

The Financial Crimes Enforcement Network (FinCEN) maintains a fact sheet webpage that explains how the Bank Secrecy Act (BSA) applies to MSBs. Crypto exchanges are classified as money services businesses (MSBs) and may be subject to Treasury and FinCEN rules for daily transaction reporting. The regulatory guidelines being drafted by these enforcement organizations could be interpreted as a threat to the crypto currency community's privacy philosophy, which is one of the key pillars of crypto money.

Regulations aimed at preventing fraud (from Hellenic enterprises and organizations) and criminal activities including terrorism and money laundering are always in the spotlight. As a result, having a solid governance framework that lends well to reporting is

ideal for operating any organization that may be classified as an MSB. Cryptocurrency will continue to be a popular topic, with consumer protection and compliance being the main drivers. Regulators must strike a balance between ensuring compliance while also allowing for rapid technological advancement.

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As a result, tracking actions, events, and activities is critical for every company involved in the digital currency industry.

Several pieces of crucial information are recorded with each transaction by the platform's ecosystem of technologies. The user's IP address, user agent, request header, user details, and transaction details are all included in this data. Based on request specifics, a categorization procedure happens, recording occurrences as mission critical or non-mission critical. Every request is logged

as it is tracked and progresses through the workflow to be processed.

The key information for constructing the needed compliance reports is a combination of information about events and activities. Figure 5.11 displays the compliance officer monitoring customers, sellers, marketplaces, blockchains, and other real-time transaction data, which includes details such as what is being sold, who paid how much to whom, the parties' IP addresses and area, and so on.

A basic amount of governance is built into the marketplace from the start. It first established environmental security with a properly secured network to combat cybersecurity assaults while also protecting participant information. The data security measures are initially satisfied by using a VPN and HTTPS encrypted networks, as well as employing best encryption practices for data transmission and storage.

Figure 5.11: Observation of occurrences and

activities

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Because the marketplace provides a value-added service, a compromise with the network administrators' owners is required in terms of anonymity. The usage of a role-based onboarding procedure to categorize individuals when they are onboarded into the network arranges profiles into appropriate categories based on the network or marketplace's participant kinds. Regulators like this strategy since KYC is satisfied and participants are controlled at the group level. Groups can be assigned restrictions or constraints by regulators and officials, making the network much more manageable. Architects of such digital currency businesses can build group-level rules and engines, giving authorities a level of compliance supervision.

The AML framework is built using actions,

events, and entitlements. Transactions that occur and may create a certain breach event can now be raised, with actions done based on the identified event, thanks to the profiles developed and categorized throughout the registration process. The escalation process will create network notifications if a profile attempts to override certain limits based on the profile or attempts to perform a transaction that the profile is not authorized to perform.

The fact that these safeguards are integrated into the network shows regulators and compliance officers that the system is auditable. Entrepreneurs who integrate an auditable system that meets regulatory criteria and best practices have the ability to contribute to the marketplace's transparency.

THE FIRST INITIAL COIN OFFERING (ICO)

Richard Thompson, Marvin Loh, and Sarah Swammy

Bitcoin is a digital currency.

A symbiotic link between the currency and the marketplace is naturally established by continuing the journey of creating, launching, and bringing a crypto currency to a critical mass. Cryptocurrencies only exist within the

networks in which they were created. Those networks that give life to a specific currency will live or be viable in relation to the market's utility value.

At the very least, this will be obvious at first. It's simple to misinterpret the entire relationship as a crypto currency. However, as an initial coin offering (ICO) is released and the number of crypto currencies grows, it is critical to deconstruct all of the components in order to bring clarity. The necessity of controlling the marketplace through a well-defined governance system was discussed in detail in Chap. 4. defined crypto money and its various kinds. Because an ICO is the ideal method of bringing a crypto currency online, this chapter walks you through the steps of starting an ICO using the LUCKY DOG coin as a model.

When Liberty Standard assigned a value to Bitcoin based on the cost of the electricity necessary to manufacture this type of electronic money at $1309,03 (BTC) to 1

USD, it formally brought the concept of crypto currency to reality. Minting is a technological process that oversees the generation and protection of cryptocurrency, while cryptography conceals the identity of all its users.

A blockchain is a specialized immutable, decentralized, anonymous, and trustless database that implements the digital coin, the item of value. To run a blockchain, a massive amount of computational power is necessary. Cryptocurrencies brought the power of blockchain technology to light, and they provided the fuel that allowed blockchain networks to develop.

Crypto Uncovered, S. Swammy et al., https://doi.org/10.1007/978-3-030-00135-3 6

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The pet industry is a market of 86 billion dollars. A lovely market to visit.

The launch of a digital currency has been set as a goal. This coin will exist within the fortunate. io network and will be used to manage transactions as a medium of exchange. The coin will be based on the Ethereum network and will be a transactional token. In the following sections, we'll go over some more details. In this high-growth industry, a digital currency would be useful for tracking retail activities, providing dog breed preference information, and tracking inoculation, licensing, and registration records of dogs via the blockchain.

What is Crypto Currency and How Does It Work?

When you strip away the mystique and buzz around crypto currencies, you'll find that it's just a computerized accounting system with entries that can't be changed until specific requirements are met. Every transaction is

broadcast to the entire network at the same time. However, confirmation can only be obtained by solving the hash function, which takes a finite amount of time. This type of consensus confirmation is a fundamental notion in crypto currencies.

The heart and soul of crypto currency is transaction validation by consensus. Transactions go through a pending to confirmed workflow. While a transaction is pending, it can be changed. Once a transaction is validated, it is permanently recorded in the blockchain. It can no longer be forged. It can't be undone, and it's not part of the so-called blockchain, which is an immutable record of past transactions.

Miners are the sole participants in the decentralized transaction network who are able to confirm transactions. Miners are incentivized to complete transactions by being awarded 12.5 Bitcoin each confirmed transaction, using Bitcoin as the basis from which all other crypto currencies are created.

Within a crypto currency network, this is their function.

They accept transactions, stamp them as legitimate, and disseminate them around the network. Every node must add a transaction to its database after a miner confirms it. It must be integrated into the blockchain. The underlying data structure is a Merkle Tree, which is an encrypted hash database. A miner can theoretically be anyone. A decen- tralized network lacks the authority to outsource this responsibility.

As a result, a crypto currency must have a mechanism in place to prevent one dominant party from abusing it. The system would immediately fail if there were no controls in place to prevent the propagation of fake and fraudulent transactions.

Crypto currencies are records in decentralized consensus databases about tokens. Because the procedure is secured by powerful encryption, they are referred to as CRYPTO

currencies. Cryptography is employed in the creation of crypto currency. They

Figure 6.1: The Workings of Cryptocurrency

are protected by mathematics. It is nearly impossible for a Bitcoin address to be hacked because of the protection.

A high-level overview of crypto money is depicted in Figure 6.1.

Crypto Currency Types

Each crypto currency solves a specific problem and falls into one of the three categories listed below:

- Transactional

- Platform

Tokens of utility

Some crypto currencies fall into multiple categories. The categories, as well as some examples, are covered further down.

Transactional

It is regarded as the first crypto currency category. These are primarily intended to be used as currency and exchanged for products and services. Bitcoin, Litecoin, and a variety of other transactional crypto currencies are examples.

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The goal of this type of crypto currency is to abolish the need for government-issued money. It's possible that some or all fiat currencies will be replaced by crypto currencies in the future. However, central

banks may still provide substitute cryptos; Singapore's government, for example, is experimenting with this idea through Project Ubin.

Platform

Platform crypto currencies are meant to cut out the middlemen. These are also used to construct markets and even to launch new crypto currencies. Platform crypto currencies serve as the foundation for a variety of future applications.

Ethereum is a great example of a platform crypto currency. Smart contracts are run on a decentralized platform like Ethereum. A smart contract is a type of program that executes exactly as it is written. As a result, the risk of fraud, censorship, or even downtime is greatly decreased. Ethereum is also the foundation for several new crypto currencies.

Tokens of Use

Utility crypto money is used to complete a certain task. Ripple is an example of a utility crypto money (XRP). Its purpose is to make fiat money transfers as cost-effective and efficient as possible. It is also used by a number of banks and institutions. UBS, Santander, BMO, and American Express are among the companies involved. Utility tokens, according to tech investor Nick Tomaino, can be divided into four categories:

Asset tokens are a type of cryptocurrency.

Traditional asset tokens are digital representations of traditional fiat currencies.

Tokens for use

Access to digital services is provided via usage tokens. Because users are provided access to a virtual payments network, Bitcoin is classified as a usage token.

Tokens for work

Users can contribute work to a decentralized organization using work tokens. Maker, for instance, is a work token that acts as a backstop in a collateralized debt scheme.

Tokens with a hybrid design

Hybrid tokens combine the benefits of both usage and labour coins. They can be used for a variety of things.

Ethereum

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Ethereum is a distributed public blockchain network, similar to Bitcoin. Although there are some significant technological differences between the two, the most crucial distinction to make is that Bitcoin and Ethereum serve very different purposes and have very different capabilities. Bitcoin is a peer-to-peer

electronic cash system that allows for online Bitcoin payments and is based on block-chain technology. While the Bitcoin blockchain is intended to track the ownership of digital currency (Bitcoins), the Ethereum blockchain is used to execute any decentralized application's programming code. Instead of mining for Bitcoin, miners on the Ethereum block chain labor to earn Ethereum, a form of crypto asset that powers the network. Ethereum is utilized by application developers to pay for transaction fees and services on the Ethereum network, in addition to being a marketable crypto currency.

The Ethereum Virtual Machine is a Turing complete software that operates on the Ethereum network and represents Ethereum's primary invention. Given enough time and memory, any program, regardless of programming language, can be run. The Ethereum Virtual Machine makes the process of developing blockchain apps far more accessible and advantageous than it has ever been.

Ethereum allows for the development of potentially thousands of distinct apps on a single platform, eliminating the need to create a new blockchain for each new application. It enables developers the ability to create and deploy decentralized apps. A decentralized application, often known as a DAPP, performs a specific purpose for its users. Bitcoin, for example, is a DAPP that offers a peer-to-peer electronic cash system to its users. It can also be used to make online Bitcoin payments. A blockchain network is used to run the code of decentralized applications. This means that they are not under the control of a single person or a centralized institution.

Ethereum has the ability to decentralize any centralized services. Many interme- diary services exist across a wide range of businesses, including apparent bank services like as loans. Intermediary services such as title registries, voting systems, regulatory compliance, and much more are included.

Ethereum can potentially be used to create Decentralized Autonomous Organizations (DAOs). A DAO is self-contained and does not have a single leader. They're powered by a set of smart contracts and run by programming code. The Ethereum blockchain is used to create these smart contracts. The code is intended to replace a traditional organization's rules and structure, obviating the need for people and centralized control. A DAO is owned by everyone who buys tokens, yet

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Rather than comparing each token to stock shares and ownership, tokens operate as contributions that grant people voting rights.

All of the Ethereum blockchain's characteristics are available to decentralized applications that operate on it.

Immutability—Data cannot be changed by a

third party.

Corruption and tamper-proofing—Apps are built on a network based on the idea of consensus, making censorship impossible.

Secure—Applications are effectively protected against hacking assaults and fraudulent activities since they have no single point of failure and are encrypted.

Apps never go down and can't be turned off, thus there's no downtime.

Decentralized applications have many advantages, but they are not without flaws. Smart contract code is written by humans. As a result, they are only as excellent as the authors who create them. Because of programming faults or oversights, unintended negative consequences can occur. When a mistake in the code is exploited, there is no way to block an attack or exploitation.

Either a network consensus or altering the

underlying code can be used to halt it. It goes against the blockchain's original intent, which is to remain unchangeable. Furthermore, any action done by a central entity raises substantial doubts about an application's decentralized nature.

Contracts with Intelligence

Nick Szabo, one of the founders of blockchain, predicted that smart contracts will be a key component of the technology. Blockchain is the cryptocurrency's main payment method and decentralized record-keeping technology. However, when increasingly sophisticated transactions enter the blockchain, it does not address the standardization of data content.

Anyone can assume that if crypto currencies are used to pay for unstructured assets like bonds with embedded call options, the transaction description must grow more sophisticated to match the transaction nature. These digital contracts, sometimes known as

self-executive contracts, would include not only the actual economic terms between two parties, but also settlement instructions, fines, and rules governing the transaction's enforcement.

The company's founders saw a need for a computer application that could control the transfer of nominal units between two parties. This concept became the foundation.

Figure 6.2: The advantages of using a smart contract. Computer code is buried in the contract's details and distributed over the blockchain's computing and management network.

The Ethereum smart contract was presented by its founder, Vitalik Buterin, at a DC blockchain summit in 2016, explaining the workflow of how an asset or cash is

transferred into a program. The program runs at some point and automatically validates a condition for how the asset is allocated, determining whether the item should be awarded to one party or a third party according to the contract's rules, or if it should be immediately repaid to the original party.

A contract may have stipulations requiring the passing of a physical inspection by a determined veterinarian, as in the case of our working model Lucky coin. Escrow coins are handed to a designated breeder. If a pure breed dog has a physical failure, tokens are refunded to the original party. The document is recorded and replicated on the blockchain, giving it specific security and immutability. The importance of a smart contract is illustrated in Figure 6.2.

The ESCROW account is a popular smart contract implementation. Consider the situation of an employer and a consultant. The consultant wants to know that his

company will pay him before the end of the month, but the employer is unsure of the consultant's ability to deliver the service.

The employer transfers the funds to an escrow account, which assures the consultant that the employer will have sufficient funds to pay him when he completes the work, and the employer is unconcerned because if the consultant does not complete the work as promised, the funds will be returned to the employer's account (Fig. 6.3).

This is used to raise new crypto currency venture funds. Startups use an ICO to avoid the time-consuming and regulated capital-raising process required by venture capitalists and banks. Early investors of the project are given a share of the crypto currency in exchange for legal money or other crypto currencies, most commonly Bitcoin or Ethereum. This is also known as an ICO (initial coin offering) (IPCO).

An initial coin offering (ICO) is a method of

raising funds for a new crypto currency or an original idea that can be implemented on the blockchain technology (primarily, as of now).

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Fig. 6.3 ESCROW vs. Smart Contract

now). If you've heard of IPOs (initial public offerings) in the traditional stock market, you'll recognize that an ICO is a similar, but somewhat different, concept for crypto currencies. When a group of smart developers and entrepreneurs come together and come up with a creative idea, they offer tokens for a new crypto currency in order to raise enough funds to turn their concept into reality. The major distinction between ICOs and IPOs is that when you invest in an ICO, you receive tokens of a new crypto currency that may be listed on exchanges once the concept has been matured. It means you won't get any equity in the company like you would with an IPO.

An initial coin offering (ICO) normally lasts a week or longer. Everyone can buy tokens here by exchanging established crypto currencies like Bitcoin (BTC) or Ethereum (ETH), just as they can in traditional stock market IPOs. A particular objective or limit for project fundraising can be set, which implies that each token will have a predetermined price that will not vary during the ICO period, as well as a fixed token supply. The quantity of tokens to be distributed is usually specified by the company. For example, ICOs allot 40–50 percent of tokens; 10–20 percent goes to the development team and their efforts to make the product successful; and 20–30 percent is set aside for future use. Let's take a look at some of the most well-known and successful initial coin offerings in the past.

The Ethereum ICO in 2014 was the first ICO to publicly introduce the smart contract, raising 18 million Bitcoins worth $1 billion.

Each Ethereum is worth $0.40. It was one

among the first to popularize the notion of an initial coin offering (ICO). The Ethereum project was announced in 2014. Its initial coin offering (ICO)

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At $0.40 per Ethereum, the company raised $18 million in Bitcoin. The project went live in 2015, and Ethereum's value soared over $14 in 2016, with a market capitalization of more than $1 billion. Since acquiring that level of financing, Ethereum has rapidly risen to become the world's second-most valuable crypto currency ecosystem today.

The Golem Project is a creative+ paraphrase of the word "golem." It's a terrific thing to raise $8.6 million in a matter of minutes. The Golem project will be remembered for accomplishing that goal. Given Golem's status as a decentralized worldwide market for computing power, the high level of interest was not surprising. The ICO started at

$0.01 and raised $8,596,000 in just a few minutes, selling 820,000,000 tokens. The coin is currently valued at $0.512, with a return on investment of +5019.10 percent.

LISK, the world's first modular blockchain-based platform, enables developers to build programs that run on sidechains (this is a good thing). Because the apps are designed with Javascript, programmers select them. Many of Ethereum's main players were on board, and as a result, the ICO was a huge success. Lisk's ROI now stands at 19,080 percent after raising $5.8 million in four weeks at a price of $0.076 per token.

How to Start an Initial Coin Offering (ICO)

Some entrepreneurs consider ICOs to be a tool that can be used for any enterprise. Money can be raised fast, and the time-consuming and costly process of registering an IPO with regulatory bodies can be avoided. It used to be true in the early days of

the ICO market, but it is no longer the case. An ICO is not a mechanism that can be used to raise funds rapidly. The ICO ethos is forming, and businesses are adopting informal guidelines. The most important issue any startup considering an ICO should ask is whether they can meaningfully integrate digital tokens into their business strategy. If your coin's sole purpose is to be traded on an exchange, the price will almost certainly plummet soon after the ICO. Any token released during a campaign will be subject to intense speculation as soon as it hits the market. The only thing that can defend a demand that can be produced by the true utility is strong demand for the token. Authenticity and transparency are two of the crypto currency community's numerous basic foundations. This includes the initial coin offering (ICO) market. As a result, an ICO whose sole purpose is to profit the project founders at the expense of the contributors will not be well received.

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Swammy

The seven major steps for starting an ICO are listed below.

Create the Product

Create a White Paper

Make sure you're on the right side of the law.

Invent the Token

Audit of Security

- Leadership

Organize the Neighborhood

Create the Product

Hustlers who are striving to collect money as rapidly as possible often overlook this

important phase. The most important aspect of an ICO is developing a product. Spend your efforts building a blockchain solution that is stable, strong, safe, and scalable.

Only then can you tell us how it will affect the globe. You might be able to get away with launching an MVP or beta before starting your token sale. However, I believe it is reasonable to conclude that most startups will require some form of equity investment to get started. When we wish to make money, we need money as well. This isn't an exception. Your token must be used by your product, and you must have a product. Let's design the product abstract using the use case from the final chapter of the LUCKY coin.

The LUCKY currency is a smart contract-based blockchain platform based on Ethereum. The platform aids the dog community by constructing and developing solutions aimed at enhancing the quality of dog care around the world. The blockchain empowers LUCKY coin to make a positive

impact on the world. Through a crypto currency reward system that encourages community engagement, LUCKY coin grows the Dog world while also creating market intelligence. The LUCKY coin is the first crypto currency to use a decentralized review mechanism to reward owners and veterinarians who contribute to the community in a transparent manner.

The LUCKY coin Foundation team is a passionate believer in putting the future of health care in the hands of the people. In the medium and long term, this will result in the disruption of existing industries and the establishment of new sectors. The platform is expected to substantially enhance Dog health and hygiene practices, hence enhancing the quality of life for individuals, resulting in improved overall health and longer longevity, according to LUCKY coin.

A white paper is a technical manual that thoroughly covers the product's technical elements. It also includes a description of the team and a tale about the token generation and distribution plan, as well as the problems it intends to tackle and how it intends to solve them. To recap, it is a presentation, a business plan, a marketing plan, and a technical manual all rolled into one. So you're probably wondering why there are so many terrible white papers being published. I can tell you from personal experience that writing a white paper is not easy.

These are extremely complex texts, and far too few teams devote adequate resources to writers and marketers. Hiring verified external authors forces founders to be more meticulous and comprehensive, whereas bad vendors will use language and fluff to hide holes in thinking or product inefficiencies. If a white paper for the LUCKY coin were to be written to set the stage for the world's first pet coin, the white paper should thoroughly explain a new conceptual framework to be

employed inside the Dog world for organizational purposes. It should begin with something like this:

We have established a model that can overcome the bulk of the Dog industry's primary restraints and, moreover, present numerous approaches that will considerably increase the efficiency of Dog practice, thereby raising the degree of Pet well-being for the owner, using modern technology breakthroughs. LUCKY coin aims to build a Dog World community by awarding people with crypto currency for their significant contributions. The foundation will experience a rise in a currency as a result of this incentive system, which will reach a broad market, including a large number of people who have never participated in a crypto currency economy.

"To defend the blockchain vision from political pressure and legislative interference, blockchain networks rely on a decentralized

architecture that can't be controlled by any one person or group," according to Harvard Business Review.

The concept of bringing together dog owners and the associated marketplace of service providers is wonderful. It necessitates the formation of a community in which openness and shared accountability are possible. The Metro Dog Foundation's main goals are to increase the quality of Dog care around the world, lower the cost of pet care and treatment, and foster a Dog community. The LUCKY Token will be designed to benefit the Metro Dog Foundation with their fundraising efforts.

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By providing people power, the missions described above can be accomplished. LUCKY coin is concentrating on the development of a number of tools, each of which is aimed at a particular aspect of the

Dog world. Individuals who will earn LUCKY Tokens as a reward utilize these tools. They can use it to pay for their pet's therapy or to buy pet supplies afterwards.

The main goal is not to compete with other crypto currencies, but to give a solution and assistance for Dog Care Services around the world using blockchain technology. The Metro Dog Foundation is looking to see what kind of substance and value can be developed with a coin (LUCKY) that represents everyone's health. The LUCKY coin will serve as both a financial and logistical platform for the global dog community. The exact amount of the Foundation's contribution in ERC20 coins (LUCKY) for Dog projects will be disclosed later in the white paper.

Customer feedback is an important aspect of any service industry that wants to succeed in the long run. The world of pet care is no exception. The owner community has more control over the globe than any regulatory

authority, central institution, powerful organization, or individual. The world players value interpersonal trust more than continuous, reliable feedback from the owners.

This can only be accomplished with the help of a community, which is where LUCKY coin comes in. The LUCKY coin stresses the world's difficulties and gives ways for improving the efficiency of the Pet profession. Implementing a blockchain-based industrial crypto currency can encourage the global community to address the majority of current and future limits. The four phases of implementation are listed below, each having its own set of milestones, objectives, and focus.

With the white paper sample, we'll come to an end. A white paper is created in this manner, with the platform features and benefits highlighted first, followed by project milestones. A sample roadmap for the

LUCKY coin launch is provided below. Any white document should include a road map (Fig. 6.4).

However, a working proof of concept carries more weight than a white paper or any other corporate asset. So don't stop at a white paper; create a functional prototype and illustrate the concept to entice more people to join your ICO.

LUCKY coin roadmap (Fig. 6.4)

Conduct legal research

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"Leave things to the specialists," as the saying goes, is often uttered and sometimes followed. When it comes to registering and launching ICOs and digital currencies, however, this is sound advice. ICOs are not recognized by the Securities and Exchange Commission (SEC). Any implication that a

communication related to a security being offered is being conveyed, or any funder who may actually fund an ICO, interprets the message to mean that an asset that yields a return other than what is being proposed is the funding of a token with no value, which can be legally fatal to the ICO issuer.

Entrepreneurs beware; this is a vital job that should be performed by a legal specialist such as Cooley, Perkins Coie, or K&l Gates, all of which have earned strong reputations in navigating the legal minefield of ICO registration. No entrepreneur planning to launch an ICO wants to create the impression that they are buying an asset due to unintended communication. Only a token is being sponsored that supports market transactions within the market network.

There can never be any discussion about a possible price hike or demonstrations of returns. The legal professionals will draft the legal description and token, as well as the message that will be sent to the funders.

Allowing specialists to aid with the process and keeping transparent with all funders helps to keep regulators like the SEC and FinCEN at bay. During registration, the governance framework designed to manage participants to satisfy KYC and AML criteria, as well as the continuation of excellent compliance policies, must be maintained. SAFT (Simple Agreement for Future Tokens), established and created by legal stalwart Cooley, has become an industry framework; in specifically, it has become an instrument and open-source legal framework for token sales.

There are no global standards for initial coin offerings, and the registration and launch process differs by nation. To avoid legal repercussions, make an effort to comply with all applicable rules and regulations. It's a good idea to use best practices as a guideline. Wiki your team and counsel:

Investigate whether or not the token you're offering during the ICO appears to be a security. What efforts are required to assuage

concerns about the token's security?

During the token sale, target certain audiences (geo-fencing).

Establishing a foundation to champion the token is a wonderful idea.

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In the United States, soliciting unregistered securities can result in significant fines and jail time.

Sentences to prison. Nothing should be taken for granted or casually. Securities are strictly regulated in the United States, and selling unregistered securities can result in large penalties and prison sentences. If a corporation creates a token and can distribute tokens during the ICO, the token is most likely not secure, and there isn't much of a concern. Like Golem, the company can

crowdfund via an ICO and accept money from anyone. If a corporation raises cash to produce a token with the promise of later distributing tokens to investors, it is doing a token presale rather than an ICO.

The issue is that if a corporation conducts a token presale, it may be construed as selling securities under the US Howey Test1, triggering a slew of SEC securities limitations as well as potentially costly security registration and reporting requirements. Some companies have formed outside of the US and excluded US investors from their token presale to avoid being subject to US law, which may apply to international companies if they are deemed a Foreign Private Issuer by the SEC. "Due to regulatory uncertainty, you must not be a US individual by citizenship or residency," DFINITY, a Swiss firm, stated in its token presale.

Alternatively, a corporation can opt to be subject to US securities legislation and abide by it in order to legally take money from US

investors in a token presale. The SAFT and CoinList (a platform for token-backed networks to generate funding through pre-launch token sales) aim to simplify US securities regulatory compliance and make it simple for enterprises to legally take money from US investors in token presales. SAFT is based on the YC Simple Agreement for Future Equity (SAFE), which has become the industry standard for angel and seed round investment agreements. SAFE provides future equity to investors, while SAFT appears to promise future coins.

Make the Token.

The creation of the token is the simplest element of the ICO procedure. When you create a token at its heart, you've created an asset that your company needs to survive. Any tradable good can be represented by a token. Digital money, loyalty points, gold certificates, IOUs, in-game stuff, and other items fall under this category. Tokens are analogous to company shares sold to

investors in an initial public offering (IPO).

Before you start making anything, you should decide on a few things. This comprises the amount of money you want to raise as well as the quantity of blockchain or Ethereum tokens you wish to issue.

1 The Supreme Court devised the Howey Test to determine whether certain transactions qualify as investment contracts and, if so, whether they must be registered and disclosed under the Securities Act of 1933 and the Securities Exchange Act of 1934.

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The quantity of tokens you intend to keep for the team, which you will issue. The total number of tokens you intend to sell during the pre-ICO (if you decide to sell some of the

tokens before the main ICO). It should also be decided ahead of time in which scenarios additional tokens will be issued. Several platforms, including as Ethereum and Waves, allow you to generate tokens without having to start from scratch with a blockchain. The selling of these tokens is controlled by a smart contract. It is a computer program that, under certain conditions, may directly control the transfer of digital assets between parties.

Creating the token's initial value is a time-consuming process. We should think about a lot of possibilities. It's known as the tokenization procedure. Tokenization entails defining a monetary unit to represent a certain asset. Tokens operate as a computing protocol in the blockchain and crypto currency environment, where developers can digitally assign a token to become a medium for value exchange within a network of users.

Designing a crypto-economic purpose for the token to exist and have genuine utility, beyond its speculative trading value, is a

fundamental difference for any tokenization endeavor. The goal of cryptoeconomics is to match the incentives of using a token system to encourage adoption.

All subjects engaged in beneficial activities.

Despite the fact that tokenization has recently become a buzzword, it is not a novel notion. Thousands of working versions of tokenized currency existed in the United States as recently as 1950. Individual banks would produce banknotes; industrial and agricultural trading companies would issue "scrip" to help simplify transactions; and government, retail, and property brokers would offer alternatives to illiquid government-issued currency. The US dollar, for example, became a long-standing example of a classic asset token after moving away from a gold-backed standard. The value of a dollar tokenized on the blockchain should be about a dollar. However, because a distributed network of servers, like as blockchain, allows for instantaneous rate of exchange, even slight

price swings over time can provide arbitrage opportunities between the value of a token and the asset it represents.

Tokenization has become a prominent topic as a result of ICOs and token generation events (TGEs). A corporation will issue a new crypto currency, digital coin, or token that investors can buy as an investment in the company during these occasions. As a result, the company can raise millions of dollars without relying on the traditional VC investment approach. Crypto currency's quick rise is drawing investors and founders.

They want to be in on the ground floor of the next great thing. Many government regulatory authorities from all around the world have been drawn in. More clarification on how tokens should be constructed and offered to potential buyers is still needed. It will be more valuable to corporations and investors if the industry concentrates on the value of the token within its network. Some tokens are built from the ground up to help

others.

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Figure 6.5 shows an example of token economics.

The project's precise business goal has a better chance of being on the correct track for long-term success.

Let's look at LUCKY coin's token economics. The LUCKY team will create an ERC20 standard token called LUCKY Coin using an Ethereum smart contract (LUCKY). ERC20 compliant tokens are supported by all Ethereum wallets, including Jaxx, MyEtherWallet.com, and Ethereum Wallet. The ICO contract will be directly linked to the token contract, allowing for immediate token issuance. Users will be able to see how many tokens they will receive in exchange for their contribution in real time and will not

have to wait long to receive them (sending will be enabled immediately after the ICO ends) (Fig. 6.5).

The total quantity of LUCKY produced will be 200,000,000.

The ICO will sell 60% of the tokens to raise funding for product development, operations, and international expansion.

The project founders and the rest of the team who contributed to the development of the project with their hard work and dedication will own 16 percent of the tokens.

Early stage angel investors, genuine believers, who showed a lot of trust and contributed rocket fuel for our project would receive 4% of tokens.

5% of tokens will be used to fund the bounty pool, which will be used to reward contributors who help us create and curate

our database of entities.

8% of tokens will be given to our advisers and ambassadors who contributed their knowledge and expertise to the project.

7% of tokens will be set aside for future partners who join the project at a later date. All tokens owned by the founders, workers, and seed investors will be reversed vested for a period of 24 months, with monthly cliffs.

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Unsold tokens will be moved to the marketing budget. After one year, when the worldwide marketing campaign begins, tokens will be locked within a smart contract and accessible. The lockup is intended to demonstrate to contributors that we believe in the value of the vibe, as well as to reassure them that the tokens will not be sold right away and will only be used for marketing and

sales purposes.

Audit of Security

An audit determines whether your company is adhering to good data protection practices. An audit can assist a company determine whether or not it has appropriate rules and procedures in place. Experts examine the code to see if it is secure, looking for any existing vulnerabilities, future problems, or coding faults that could expose users.

Even experienced developers can make mistakes when developing code due to the intricacy of a new programming environment. Verifying accuracy through unit testing and tooling validation becomes crucial.

The following are some of the most well-known smart contract security auditing firms. Each of them is well-known for their abilities. As a business owner, you'll want to do your

homework before engaging an advising firm to help you reach your objectives.

New Alchemy is a tokenization-focused strategy and technology advising firm.

Solidified.io is a crowdsourcing platform that allows any developer to submit their code for a thorough review by a community of skilled and certified specialists.

Coinfabrik is a company that assists other companies in developing smart contracts. In addition to aiding with smart contract audits, it is involved in the creation of hyper ledger, the private blockchain, supply chain blockchain, wallet protection, loan data sharing, and safe, dependable crypto exchanges.

Zeppelin evaluates code and produces a report on a company's code quality, which is then published online—the same is true for New Alchemy.

Token Market offers a full suite of token launch services, including the creation of tokens, the development and auditing of smart contracts, and the hosting of crowd sales, among other things.

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Leadership

Any project's team is critical to its success. It's always crucial to make sure a programmer is present in the team or at least understands the technical requirements of a blockchain project after looking at what the project wants to solve, as well as the crowd sale structure and token utility.

The CEO/Co-founder of Blocklancer makes it quite clear whether or not the project has team members who can navigate the space. He's a computer scientist with a master's degree in the field. Other technically savvy

members of the team are there, but a Technical Founder is someone who, in my experience, venture capitalists and angel investors look for in a tech firm they're considering investing in.

The founder of Blocklancer made a point of putting his face out there right from the start. He also gave a detailed interview to Crypto Candor in which he outlined key aspects of the Block lancer ecosystem. This is the best assurance that ICO investor can get in a project because it guarantees that the CEO/Lead Developer exists!

Organize the Neighborhood

It is, without a doubt, the second most crucial phase in the ICO process. Token sales rely on investors, therefore it's important to remember that in order for your token sale to succeed, you'll need a large number of people to know about it. The bulk of token sales are driven by initial hype, which is unfortunate but true. This buzz should ideally be backed

by investors that believe in both you and your coin and will not sell at the first sign of trouble. The following are the ICO marketing channels in which I would recommend investing time and resources:

Forums The most well-known is Bitcointalk, which hosts almost all ICO projects. You'll get a lot of feedback, both favorable and negative, but it'll all help you develop your project.

Calendars for Initial Coin Offerings Bloggers and journalists frequently compile lists of "top ICOs" using data from the ICO calendar sites listed below (https://itsblockchain.com/top-5-upcoming-icos-to-invest-in/).

Coinschedule.com

CoinGecko.com

ICOCrowd.com's Cyber Fund

ICOCountdown.com

ICO-List.com

Coinlist.com

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Discussions on Quora A platform like Quora could be useful in this situation. On Quora, there are several debates about various ICOs and crypto currencies. You can take part in these discussions and provide a link to your ICO landing page.

Telegram and Slack In your communications plan, you must develop a Slack and Telegram channel. Potential investors will be able to communicate with the project's founders, team members, and each other through these channels. It's critical to keep an eye on these channels at all times. Users' questions and false charges must be quickly responded to.

Coverage in the media A corporation can benefit from good public relations in a variety of ways. To create credibility and present your organization as an innovator and thought leader, you'll need good PR in the relevant media venues. It also has the capacity to persuade others of the viability of your business plan. The mainstream media is becoming increasingly skeptical of ICOs. As a result, having a compelling story outside of the ICO is crucial. It's critical to keep in touch with your target audience before, during, and after the campaign. Also, keep in mind that pre-ICO media differs significantly from post-ICO press, as the target demographic shifts.

Crowdsale of an Initial Coin Offering

The pre-allotment of tokens reserved by the ICO transferring from the assigned account of the ICO to the accounts of all investors participating in the ICO that accurately reflects the purchase amount and the funds

from the investor transferring to the ICO's funding account is a good indicator of a successful crowd sale. A reconciliation process takes place right after the ICO public sale event to ensure that tokens are delivered and cash are transferred. A successful ICO crowd sale has occurred if there are no problems or exceptions, and first investors are satisfied with their assigned tokens.

Model of Ethereum Development

Traditionally, application development has relied on a central server to manage and deliver all requests. Your web application will need to be hosted by a hosting provider, such as AWS, Heroku, or a virtual private server (VPS). This core application is used by all of the clients.

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Traditional centralized application development (Fig. 6.6)

A browser or another API can use your service as a client. When a client makes a request, the server works its magic, communicating with the database and/or cache, reading/writing/updating the database, and serving the client.

This architecture works well in the majority of cases. However, there are some applications where having that database openly and securely available by everyone would be useful, and you wouldn't have to rely on this web app owner for your data (Fig. 6.6).

Consider the case of eBay. Consider yourself a top seller with hundreds of positive feedback. However, eBay has suspended your account for some reason. That would be extremely awful and would have a significant negative influence on your business. It would be ideal if all of your reviews and ratings

could be relocated to another platform in this circumstance (say eBay Competitor).

Despite the fact that eBay is a well-known and trusted intermediary between buyers and sellers, they do receive a commission on each sale. Consider what it would be like if there was a way to remove eBay from the buyer-seller transaction. This way, you'll be able to reduce the amount of money you spend on commission. Your information is also accessible. Here's when decentralized apps (DAPPS) come into play. DAPPS (decentralized applications) are simple to create with Ethereum. Every client (browser) communicates with its own instance of the application, as you may have noticed. There is no central server to which all clients can connect. This implies they'll need a full copy of the blockchain running on their computer/phone/etc.

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Figure 6.7: Ethereum's Growth Model

anyone interested in interacting with a DAPP That means that before you can use an app, you must first download the full blockchain, after which you may use the program. This may appear absurd at first, but it offers the advantage of not requiring a single central server. Figure 6.7 depicts a high-level reference model of an Ethereum DAPP.

Solidity is a programming language for solidity.

Solidity is a high-level programming language with a syntax comparable to JavaScript that is used to compile Ethereum Virtual Machine code. Solidity is a contract programming language that is comparable to Javascript and C in that it is statically typed. Each contract has state variables, functions, and standard data types, just like objects in object-oriented programming. Modifier (guard) clauses, event notifiers for listeners, and custom global variables are all contract-specific features. Solidity is used to develop

contracts for voting, crowdfunding, blind auctions, multi-signature wallets, and more in the Ethereum ecosystem.

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Before writing any Solidity code, you must tell the compiler which version of Solidity you'll be using. The following is an example:

0.4.19 pragma solidity;

Solidity has con- tracts and object-oriented programming languages have classes. In object-oriented programming languages, contracts are similar to classes. The Contract, which contains all the variables and functions, is the most basic building block of an Ethereum app. The steps to creating a Contract are outlined below contract 1 Contract2.

FirstContract is the name of the contract in this case. The body of the contract is everything between the curly braces. Nothing is stated in the contract's body (i.e., what it

will do or what code it will run). However, the word contract identifies it as a contract in the code, much like the words object or function do in JavaScript.

State variables are stored in contract storage on the blockchain. Each contract has its own storage space. Javascript variables are used to store them in memory. The blockchain is used to store state variables. That's pretty cool. We can make a string variable called firstVariable and add it to our first contract:contract 1 Contract2

Variable1 (string)

Uint is a data type for unsigned integers. The concept of signed and unsigned documents

In solidity, there are variables. Variables with a sign can have any value, positive or negative. An unsigned integer, on the other hand, can only have a positive value. It can't possibly be negative.

contract 1 Contract2

uint1; uint2; uint3; uint4;

Solidity has its own set of functions. Functions are executable blocks of code.

In Solidity, a function declaration must be written as follows:

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Function1(string parameter1, string parameter2)

A declared function informs the compiler about the function's name, parameters, and other details. To build our token in the next section, we've only scratched the surface of the Solidity programming language. Please see the following link for more information on Solidity programming.

http://solidity.readthedocs.io/en/v0.4.21/index

Contracts with Intelligence

Smart contracts are computer programs that run on the blockchain and are programmed to carry out commands exactly as they are given. They can also read and execute other contracts, make decisions, send Ethereum, and read and execute other contracts. As a result, contracts will exist and run for as long as the network does, and will only stop if they run out of gas or are programmed to self-destruct.

Contracts: What Can You Do With Them? Almost anything is possible. Let's start with some simple tasks. You'll raise funds through crowdfunding, and if it succeeds, you'll have a radically transparent and democratic organization. This organization will only obey its citizens and cannot be censored or shut down because it will not deviate from its constitution. All of this can be accomplished

in under 300 lines of code.

Let's now apply the same logic to LUCKY DOG. We'll create a small application flow with Solidity and a smart contract. The concrete flow of implementation is as follows:

Constructing a development environment

- Creating the Truffle project using the Truffle Box

- Making the description of the Smart Contract

- Compiling and Migrating the Smart Contract

- Testing the Smart Contract

- Creating the UI attached to the Smart Contract

- Using the DAPP with browser

Creating a Truffle Project

Let’s set the environment that can use “node” and “npm.”

If the OS is Debien GNU, you can install the recommended version of node.js 8.x as follows.

$ apt-get update

$ curl -sL https://deb.nodesource.com/setup 8.x | bash -

$ apt-get install -y nodejs

First and foremost, the Truffle must be installed.

npm install truffle -g

As a result, we can claim that Truffle is an Ethereum development framework that is one of the most effective frameworks for developing smart contracts. Compiling and deploying source code can be done quickly and easily here. You'll need to make a directory called "pet-shop-example" and work within it. In most cases, truffle init is used to do initialization. To begin, you must create an empty project. Let's base this instruction on the well-known project "Truffle Box." More information on the truffle box may be found here.

https://truffle-box.github.io/

mkdir pet-shop-example $ mkdir pet-shop-example

pet-shop-example $ cd

$$$$$$$$$$$$$$$$$$$

Then, inside the pet-shop-example, the following files and directory structure is created (Fig. 6.8).

Below is a list of the directories and files that were utilised.

contracts directory: This directory contains the Solidity source files that describe the Smart Contract.

The migrations directory contains the migration mechanism that was used to deploy the Smart Contract.

Test files created in Javascript and Solidity can be found in the test directory.

truffle.js: Truffle configuration file

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Truffle project (fig. 6.8)

Developing a Smart Contract

In the newly formed contracts directory, create a file called "Adoption.sol" and write the following.

contract Adoption 0.4.4, pragma solidity 0.4.4, pragma solidity 0.4.4, pragma solidity 0.4.4, prag

address[16] the general public;

require(petId >= 0 && petId = 15); function adopt(uint petId) public returns(uint);

return petId; adopters[petId] = msg.sender;

public function getAdopters() returns (address[16]) adopters;

Let's take a look at each part one by one, specifying the solidity compiler's version. Solidity, like javascript, adds a semicolon (;) at the end of the line.

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0.44 pragma solidity;

Adoption is the name of the contract I declare. In this, I will put the contract into action.

Adoption by contract

The state variable "adopters" is declared here. Because solidity is a static language, the variable's data type must be declared. In addition to basic data types like string and uint, Solidity has a unique data type called "address." The account's address is saved in "Address." In this case, address is an array, and the variable "adopters" will contain 16 addresses. Because the address is public before the "adopters" variable, anyone with access to that contract address[16] public adopters can see it.

I declare the contract function adopt(uint petId) public returns (uint) require(petId >= 0 && petId = 15); adopters[petId] = msg.sender;return petId;

The integer type variable "petId" is set at 0 to 15 depending on the length of the adopters array. (The index of the array starts at zero.) As a result, I use need () to create petID 0 through 15 messages. The address of the person who called this function is indicated by sender.

As a result, "adopters [petId] = msg.sender;" populates the adopters array with the caller's address.

As a response, petId is returned to the caller.

Because petId is the key of the adopters array, it's now possible to retrieve only one address using the adopt function indicated above.

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However, because every reload necessitates 16 API requests, I'll use the getAdopters function to return the entire adopters array.

public function getAdopters() returns (address[16]) adopters;

"Adopters" has already been declared as a variable. As a result, the data type must be given, as well as the return value. So there you have it, the Smart Contract. To summarize the material, I produced the Adoption contracts listed below. This Smart Contract's compilation and migration must be continued.

Put the Smart Contract together.

This is the procedure for translating source code written in a programming language into a machine language. This machine language can be directly executed by the computer. To put it another way, it will translate the code written in the Solidity programming language

into bytecode. As a result, the Ethereum Virtual Machine, which is Ethereum's virtual machine, will be able to run it. Launch Truffle Develop from the terminal in the DAPP directory, and so on.

$ truffle growth

Then, in the truffle develop console, type "compile."

compile $ truffle(develop)

The following output will be presented if the compilation is successful.

./contracts/Adoption.sol is being compiled...
./contracts/Migrations.sol is being compiled...
Adding artifacts to the./build/contracts directory

Despite the fact that there will be a public warning, it is safe to proceed. (We'll leave the truffle development console open at all times.)

Migration

It entails migrating an existing system or similar application to a new platform. In this situation, the transferred file will perform the deployment of the generated Adoption contract to the Ethereum blockchain network. There should already be a javascript migration file named “1 initial_ migration.js” in the migrations directory. This file deploys and manages Migrations.sol in the contracts directory, allowing a sequence of smart contracts to be migrated successfully.

In the migrations directory, create a migration file called "2 deploy contracts.js." Write the following in the migration file:

module.exports = (deployer) => const Adoption = artifacts.require("Adoption"); const Adoption = artifacts.require("Adoption"); const Adoption

=
artifacts.require("Adoption");deployer.deploy(

Let's run the migrate command on the truffle develop console that is now running migrate
$ truffle(develop)

And if the outputs listed below are completed, it will be a success.

Deploying Migrations... 1 initial migration.js is now running.

0xa1f5bc4affc464999763799648db42acae317
b330d
0xa1f5bc4affc464999763799648db42acae317

0x8cdaf0cd259887258bc13a92c0a6da926986
0x8cdaf0cd259887258bc13a92c0a6da926986
0x8cdaf0cd2598

Saving a successful network transfer...

0xd7bc86d31bee32fa3988f1c1eabce403a1b5c

e8c956
0xd7bc86d31bee32fa3988f1c1eabce403a1b5c

Artifacts to be saved...

Deploying Adoption... 2 deploy contracts.js is currently running.

0xe46e604dce4322e0492be99b5d3744468e20
2839b9
0xe46e604dce4322e0492be99b5d3744468e20

0x345ca3e014aaf5dca488057592ee47305d9b3
Adoption:
0x345ca3e014aaf5dca488057592ee47305d9b3

Saving a successful network transfer...

0xf36163615f41ef7ed8f4a8f192149a0bf633fe
7bdda0
0xf36163615f41ef7ed8f4a8f192149a0bf633fe

Artifacts to be saved...

The First Initial Coin Offering (ICO)

A Smart Contract can be developed, constructed, and deployed in the local environment's test block chain using this method. Next, let's see if everything is working properly.

Putting the Smart Contract to the Test

One of the most crucial procedures is to test the Smart Contract. This is because smart contract design flaws and faults are linked to the user's tokens (assets), which might result in significant losses for the user. Two tests are carried out by the smart contract. This contains both the manual and automated tests. Let's run a manual and automatic check on the operation.

The operation of the application is checked using tools from a local development environment, such as Ganache, in the event of a manual test. These are simple to grasp because they correspond to transactions in the graphical user interface. The automatic test of

the Smart Contract in Truffle can be written in javascript or Solidity, however we'll choose Solidity here.

Create a file called "TestAdoption.sol" in the newly formed test directory and type the following into it import "truffle/Assert.sol"; import "truffle/DeployedAddresses.sol"; import "../contracts/Adoption.sol"; contract pragma solidity 0.4.11; contract pragma solidity 0.4.11; contract pragma solidity 0.4.11; contract pragma solidity 0.4.11; contract pragma solidity 0.4.11; contract p TestAdoption adoption = Adoption(DeployedAddresses.Adoption()); function testUserCanAdoptPet() uint returnedId = adoption.adopt(8); uint expected = 8; Assert.equal(returnedId, expected, "Adoption of pet ID 8 should be recorded."); function testGetAdopterAddressByPetId() adopter = adoption.a

It's a little lengthy, but let's have a look at it after we've disassembled it.

0.4.11 pragma solidity;

"truffle/Assert.sol" is imported;

"truffle/DeployedAddresses.sol" is imported.

contract TestAdoption; import "../contracts/Adoption.sol";

Adoption adoption = Adoption(DeployedAddresses.Adoption());
Adoption adoption = Adoption(DeployedAddresses.Adoption());
Adoption adoption = Adoption(

*Insert a function that will be discussed later.

Let's start by importing the three contracts listed below.

Assert.sol: This file contains the results of

different checks performed during testing.

DeployedAddresses.sol: This file retrieves the address of the contract that was deployed at the time of the test.

Adoption.sol: Put the Smart Contract to the Test.

Declare the variable adoption in a contract called "TestAdoption." "DeployedAddresses" is found in "adoption."

Let's specify the functions used for testing in the TestAdoption contract below.

testUserCanAdoptPet() is a function that determines whether or not a user is eligible to adopt a pet uint has been returned uint expected = 8; Id = adoption.adopt(8);

Assert.equal(returnedId, anticipated, "Adoption of pet ID 8 should be recorded."); Assert.equal(returnedId, expected, "Adoption of pet ID 8 should be recorded.");

Let's put the Adoption Contract's adopt () function to the test. If the adopt () function is working properly, the petId (return value) will be the same as the argument number.

Put petId of 8 into the adopt () function in this case, and use Assert.equal to ensure it matches the return value petId () address expected = this; function testGetAdopterAddressByPetId() adopter = adoption.adopters(8); address adopter = adoption.adopters(8);

Assert.equal(adopter, anticipated, expected, expected, expected, expected, expected, expected, expected, expected, expected, expected "Pet ID 8's owner should be recorded.");

The First Initial Coin Offering (ICO)

Let's see if petId is related with the correct owner's address. We'll see if the owner's address associated with pet ID 8 is correct. By the way, the variable "this" represents the

current contract's address.

address anticipated = this; function testGetAdopterAddressByPetIdInArray();

memory adopters = adoption.getAdopters(); address[16] memory adopters = adoption.getAdopters();

Assert.equal(adopters[8], anticipated, expected, expected, expected, expected, expected, expected, expected, expected, expected, expected, expected, expected, "Pet ID #8's owner

should be documented "();

Finally, we must verify that the array "adopters," which contains all of the addresses returned, is accurate. The "memory" attribute isn't stored in the contract's "storage." This indicates that it is a value that has been temporarily saved. Let's execute this test file using Truffle Develop now that we've written the test.

test $ truffle(develop)

When the following output is presented, we have successfully tested.

Using the network 'develop' command.

./contracts/Adoption.sol is being compiled...
./test/TestAdoption.sol is being compiled...
Putting together truffle/Assert.sol...

Truffle/DeployedAddresses.sol is being built...

TestAdoption

testUserCanAdoptPet; testUserCanAdoptPet; testUserCanAdoptP (133ms)

testGetAdopterAddressByPetId testGetAdopterAddressByPetId testGetAdopterAddressByPe (112ms)

testGetAdopterAddressByPetIdInArrayGetAd

(196ms)

3 passes (1s)

Create a user interface

So far, we've constructed a Smart Contract that's been put in the local environment's test blockchain and evaluated to see if it functions normally. Next, let's create a user interface that allows us to browse pet stores via the web. The basic framework is created by Truffle Box. So, in Ethereum, you'll need to create a characteristic function.

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The src directory contains the application's front-end code, which you will change in the /src/js/app.js file aplication =

web3Provider: null, web3Provider: null, web3Provider: nu, init: function(), contracts:,

init: function(), init: function(), init: function

Pets must be loaded.

var. petsRow = $('#petsRow');
$.getJSON('../pets.json', function(data)

$('#petTemplate'); var. petTemplate =
$('#petTemplate');

I = 0; I data.length; I ++) for I = 0; I
data.length; I ++) petTemplate.find('.panel-
title').text(data[i].name);
petTemplate.find('img').attr('src',
data[i].picture); petTemplate.find('.pet-
breed').text(data[i].breed);
petTemplate.find('.pet-
location').text(data[i].location);
petTemplate.find('.btn-adopt').text

petsRow.append(petTemplate.html());

return App.initWeb3(); return

App.initWeb3(); return App.initWeb3

function() initWeb3

*1Insert code here.

return App.initContract(); return
App.initContract(); return App.initContrac

function() function() function() function()
function() function() function() function()
function() function() function() function()
function() function

* 2Insert code here

bindEvents(); return App.bindEvents();

bindEvents: function() bindEvents: function()
bindEvents: function() bindE

on('click', '.btn-adopt', App.handleAdopt);
$(document).on('click', '.btn-adopt',

App.handleAdopt);

The First Initial Coin Offering (ICO)

Web 3 installation

To begin, check to see if the web3 instance is "active." It will be replaced with the web3 object of the generated application if it is "active." Create a web3 object in the local development environment if it isn't "active."

App.web3Provider = web3.currentProvider; if (typeof web3!=='undefined')

otherwise

new Web3.providers.HttpProvider('http://localhost:9545'); app.web3Provider = new Web3.providers.HttpProvider('http://localhost:9545');

new Web3(App.web3Provider); web3 = new Web3(App.web3Provider);

Contract Establishment

The "Smart Contract" that is formed will be instantiated because talking with the "Ethereum Network" via web 3 is possible. We need to inform Web 3 where the contract is and how it works in order to accomplish this.

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var AdoptionArtifact = data;
$.getJSON('Adoption.json', function(data)

Return App.markAdopted();
App.contracts.Adoption = TruffleContract(AdoptionArtifact);
App.contracts.Adoption.setProvider(App.web

Truffle contract is a helpful Truffle library. This is a web3 library that makes it simple to interact with "contract." The truffle contract, for example, synchronizes contract information throughout migration, so you

don't have to manually alter the deployed address. The information on the deployed address and ABI is contained in the Artifact file (Application Binary Interface). ABI represents information on the interface, such as the contract's variable, function, parameter, and so on.

In the TruffleContract() function, pass in Artifact to create the contract. Then set the contract of the App.web3Provider established by instantiating web3.

Updated User Interface

Let's double-check that the pet's state hasn't changed and that the UI has been updated. Then, for an instance of the deployed Adoption con- tract, getAdopters () is called. The call () function has no effect on the blockchain's state. You don't have to pay for gas because it reads the data. Also, see if each petId is associated with a specific address. If an address exists, set the button to success so you won't be able to press it.

adoptionInstance is a variable.

App.contracts.

Adoption.deployed().

if (function(instance) adoptionInstance = instance; if (function(instance) adoptionInstance = instance; if (function(instance) adoption

call adoptionInstance.getAdopters(); return adoptionInstance.getAdopters.call();

).then(function(adopters)
).then(function(adopters)
).then(function(adopters)

I = 0; I adopters.length; i++) for I = 0; I adopters.length; i++)

if (adopters[i]!=='0x0000000000000000000000(

$(‘panel-pet’).

eq(i).

find(‘button’).

text(‘Success’).

true); attr ('disabled');

catch(function(err) console.log(err.message);
).catch(function(err)
console.log(err.message);

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Using the Adopt Function to Your Advantage

In this scenario, we'll proceed with the transaction after checking the account's issue with web 3. The adopt () function executes transactions and accepts as an input an object containing the address of petId and the account.

The result of the transaction will then be reflected in the UI as fresh data.

web3.eth.getAccounts(function(error, accounts) var adoptionInstance;

console.log(error); if (error);

account = accounts[0]; var account = accounts[0];

App.contracts.

Adoption.deployed().

if (function(instance) adoptionInstance = instance; if (function(instance) adoptionInstance = instance; if (function(instance) adoption

if adoptionInstance.adopt(petId, from: account); if adoptionInstance.adopt(petId, from: account); if adoptionInstance.adopt(pet

).then(function(result) return App.markAdopted();).then(function(result) return App.markAdopted();).then(function(result) return

catch(function(err) console.log(err.message);).catch(function(err) console.log(err.message);

Now, if you're ready to utilize DAPP, go ahead and open it in your browser!

The application must be completed in its whole.

We'll utilize MetaMask, which is a Chrome addon. During that period, the account will utilize the account to develop Truffle using the Wallet Seed below. When Truffle Develop is used, this Seed appears. (It's a very common seed.) sugar pudding cream candy maple cake a honey-rich, crumble-like sweet treat

(If you're using MetaMask right now, you can go to the next screen via the Lock menu.) (See Fig. 6.9)

The MetaMask must be linked to the Truffle Develop-created blockchain. You'll need to change it from "Main Network" to "Custom RPC" in the upper left to accomplish this. For "Truffle Develop," replace to http://localhost:9545. From "Main Network" to "Private Network," the display changes (Fig. 6.10).

Metamask wallet (Fig. 6.9)

Fig. 6.10 (a) Ethereum network connection. Metamask accounts (b)

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Accounts created with the seed provided above have a weak 100ETH balance. It is

calculated based on the amount of gas used in the contract deployment. To begin, you must first set up the MetaMask as described above. Then, in a terminal, type the following code to start the local web server: (The lite - server library can be used, since bs - config.json and package.json have been created.) $ npm install ru dev

Then, on the browser, DAPPs like the one below can be displayed (Fig. 6.11).

When you click the "adopt" button on your preferred pet, "MetaMask" sends the transaction, and you can then buy pets using ETH! (See Figure 6.12).

Figure 6.11: An example of a browser's interface.

Adopt payment processing (Fig. 6.12).

On Ethereum, create an ERC 20 token.

Developers must employ a set of functions known as ERC20 in their tokens in order for them to be ERC20 compliant. This is not a law that must be followed. Most DAPP developers are advised to follow the standards in order for their tokens to connect with various wallets, exchanges, and smart contracts without any complications. This provided everyone with a concept of how future tokens should behave. ERC20 tokens have gained significant acceptance, and ERC20 tokens are used in the majority of DAPPs sold through initial coin offers (ICOs).

We've all heard of initial coin offerings (ICOs). Many ventures promise new technology through smart contracts, and investors put millions of dollars in them. It has the potential to change the planet. Most of the time, all you have is a promise, a white paper, and a website, and the MVP is produced after the crowd sale. We'll show

you how simple it is to create your own ERC20 token for the Ethereum blockchain in this part.

Let's take a look at the LUCKY token from Chapter 4 and see if we can recreate it on the Ethereum blockchain. To summarize, the LUCKY coin is a utility token utilized in the Dog Care industry. The Lucky coin bazaar is depicted in Figure 6.13.

LUCKY coin is a blockchain project with the purpose of using blockchain technology to revolutionize the dog world. The platform will make the LUCKY ERC20 token available for use in its worldwide pet-care ecosystem. The cryptography

The First Initial Coin Offering (ICO)

Fig. 6.13 The Lucky coin marketplace currency will make it easier for pet owners, veterinarians, dog insurers, dog breeders, dog authenticators, dog walkers, dog groomers, and other participants to handle dog care

services and data.

As the first cryptocurrency dedicated to dogs, LUCKY coin intends to launch a rewards program that will encourage participation from dog owners all around the world. A transparent and decentralized incentive mechanism will be used to reward each dog owner or veterinarian that makes a contribution to the LUCKY coin ecosystem.

Features of LUCKY Coin: A Decentralized Pet Care Blockchain Solution

LUCKY coin intends to implement three elements on its platform with the goal of enhancing the global health care of dogs. The concept of dog assurance is the first feature. In this case, the dog owner can protect his or her pet with a blockchain-based insurance plan that is tailored to their dog's specific needs. Each insurance policy will be rated based on the dogs' health and in accordance with the dog's doctor.

In a decentralized database, a health database will secure pet health records and data. Through specific permission, the pet owner or veterinarian will have access to the information ecosystem. An aftercare mobile app can be used by pet owners to keep track of post-treatment or monitoring of their dog's health condition. To realize the platform's goal of a worldwide pet world, the application will be made accessible for the Android operating system.

LUCKY DOG ERC 20 Token Definition

You'll need the following to make an ERC20 token:

It's when you reach to the decimal places that things get complicated. There are 18 decimal places on the majority of tokens. It means you can have as many tokens as 0.000000000000000001. When making the token, keep in mind how many decimal

places you want it to have and how it should fit into the bigger picture of your project. Let's keep it simple for now and assume that the people either have a token or don't have one. We're not going to keep anything in the middle. So, let's go with 0. However, if you wanted half a token, you could choose 1, and if you wanted it to be "standard," you might choose 18.

Specification for Token Smart Contracts

For the sake of token upkeep, let's designate certain roles.

The person who creates and installs the Smart Contract is known as the creator (Development Team).

The administrator is the person in charge of the company's day-to-day operations. Mark or one of his immediate subordinates will be the admin in our scenario, as this will be the highest level of control over the Smart Contract's behavior.

To prepare a spec, let's lay out some ground rules for our token contract.

The coin's name must be LUCKY DOG, and the symbol must be LUCKY.

During the creation, the creator must be able to specify the initial supply, total supply, maximum supply, and decimal units.

Users must be able to transfer coins from one account to another.

Any debt or a negative balance should be avoided at all costs.

There should be one administrator who isn't the inventor of the currency. That is, during the creation of the currency, the creator must appoint an administrator.

The First Initial Coin Offering (ICO)

Anyone with Ethereums should be able to

purchase or sell the LUCKY.

Admin must set the buy or sell price at any time.

The administrator function must be transferable from one address to another.

Admin must have the ability to mint the new LUCKY and send it to anyone's address.

Admin must have the ability to freeze or unfreeze any account's coins.

Admin should be allowed to create a spender account with a budget limit.

Let's get some code done now that we have a token description and a Smart Contract specification.

Token with the Highest Probability of Success

We're going to make a digital token. The fungible trade objects that can be represented by tokens in the Ethereum network include coins, loyalty points, gold certificates, IOUs, in-game items, and so on. In a standard way, all tokens implement several basic functionalities. Your token and Ethereum's blockchain will be instantaneously compatible. I'll also work with any other client or contract that follows the same guidelines.

The basic token contract might be rather difficult to understand. This is what a very basic token looks like (Fig. 6.14):

Breaking the code down to its core essentials may help you see the big picture. This function is divided into three parts:

This is the mapping.

Giving all of the tokens to the creator.

For Ethereum, sending the token to a sender.

Figure 6.14: The smallest token that is still valid

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The Mapping Process The mapping will be completed in this section. Everyone will be able to see your token balance because a database will be constructed here. Tokens like as ETH are recorded in a public ledger. Everyone will be able to see all of the balances and transactions related to that particular token.

Giving All the Tokens to the Creator Whoever developed the smart contract and tokens will receive all of the tokens in this section of the function:

Send the Token to a Sender in exchange for Ethereum. Finally, we arrived at the end of

the code. For the Ethereum that the sender invests in the DAPP, an equivalent quantity of token can be made available to them.

The reasoning of transfer is self-explanatory. It examines the sender's available token balance first. The sum is then deducted from the sender's account before being credited to the recipient's account.

Appendix A contains the whole Token Contract for the LUCKY DOG.

Create an Ethereum ICO (Crowd Sale) Contract.

Crowdfunding is a method of generating finances for a project or endeavor from the general public. This is a site where people make little investments in order to generate a significant investment. This money will be put to good use in order to meet the requirements. The investment strategy is widely disseminated. This is completed.

To prohibit any single person from purchasing more than he can afford, crypto currency: The Birth of an ICO was created. There have also been cases where artists, authors, and philosophers have used crowdsourcing to fund their work. The value exchange under contract is managed by blockchain technology. When it comes to handling rewards-based and equity-based crowdfunding campaigns, this tool will come in handy.

Using blockchain-based smart contracts for crowdfunding, the entire process of assigning suitable prizes and equity against their donations can be automated. Smart contracts are programmed with a set of specified crowdfunding criteria. The smart contract can be executed by automating the system. The goal is to give out prizes or proof of ownership of a particular percentage of the stock dependent on how much money was donated to the campaign.

In the crypto currency realm, crowd sales are

a type of crowdfunding campaign. The premined crypto tokens for the platform under development are sold through a digital currency exchange platform by trading Bitcoin, Ethereum, or another well-known digital currency. The monies raised will be utilized to further improve the platform.

The crypto tokens purchased by crowd sale participants are comparable to both rewards and equity (depending upon the model followed by the platform). Blockchain technology and digital currencies have shown that they can be retrofitted to meet the needs of any industry, including those that have been around for a long time. Crowdfunding is an example of a section in which technology can completely blend in. Let's use Solidity to create the LUCKY coin's crowd sale contract.

Definition of the LUCKY Token contract

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Specification for ICO Smart Contracts

For LUCKY, the CrowdSale smart contract must be able to initialize the following:

LUCKY LUCKY LUCKY LUCKY LUCKY LUCKY (ETH)

LUCKY requires a minimum of ETH to purchase.

Minimum Funding Goals (ETH)

Soft Cap on Funding Maximum Target (ETH)

Hard Cap on Funding Maximum Target (ETH)

Website for the Crowd Sale/LuckyDog

Beneficiary Account Information

Timeframe for the Crowdsale

A smart contract for a crowd sale should maintain a state that indicates one of the following:

- Fund-raising
- Failed
- Successful
- Closed

Provide a way to pay with ETH and buy LUCKY tokens.

Should keep track of contributor addresses as well as the amount donated in ETH.

Provide properties to see the total amount of ETH raised thus far, as well as the current ETH balance.

After each contribution, double-check the funding status.

If the status exceeds the required maximum limit, make a payout to the beneficiary account and the LifeCycle event will finish.

If the status is InComplete and Expired, run the refund logic to return the contributed ETH and bring the LifeCycle to a close.

Perform all necessary validations and keep track of all events.

You will have to set an exchange rate for your token as part of this crowd sale contract. The donors will receive a proportional amount of tokens in return for their Ethereum right away. It will also be necessary to define a financing target and a timeframe. You can ping the contract once the time has passed, and if the objective has been met, it will send you the Ethereum raised. Otherwise, the money is returned to the contributors. Donors keep their tokens even if the initiative fails to meet its objectives as proof that they contributed. The whole crowd sale contract for the LUCKY DOG project can be found

here (Fig. 6.15).

Code for an ICO Smart Contract

The First Initial Coin Offering (ICO)

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The First Initial Coin Offering (ICO)

Flowchart of an Initial Coin Offering (ICO) Smart Contract

Flow diagram of an ICO smart contract (Fig. 6.15).

THE DEVELOPMENT OF A DISTRIBUTED LEDGER

Richard Thompson, Marvin Loh, and Sarah Swammy

Blockchain

The terms blockchain, Bitcoin, and mining have been buzzing around the internet for the past few years. Before we go into the technicalities of crypto money, I'd like to define a few terms that will help us

understand the next portions much better. Blockchain is a list of records called blocks that is constantly growing. A cryptographic hash of the preceding block, a timestamp, and transaction data are typically included in each block of the blockchain. Blockchain was created with the goal of making transactions immutable, tamper-proof, and widely disseminated. A very basic depiction of a blockchain is shown in Figure 7.1.

Let's delve a little further into the blockchain and examine it from the ground up, beginning with a Hash.

Hash

In simple words, hashing is a software concept that involves taking any length of input data and running it through a cryptographic algorithm to get a set length output. A hash is a collection of alphanumeric characters that are chosen at random. It's similar to a digital data fingerprint. Let's have a look at how hashing works. We're going to

put some inputs in. The following is a list of hashes that have been generated for various sets of data.

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Figure 7.1: The Blockchain

Data Hash

Hello,
3639EFCD08ABB273B1619E82E78C29A7D
AA3326B8
3639EFCD08ABB273B1619E82E78C29A7D
AA3326B8 3639EFCD08ABB

625DA44E4EAF58D61CF048D168AA6F5E4
30DE07DB57E1
625DA44E4EAF58D61CF048D168AA6F5E4

How are you doing?

AA0AFA0D89
DF287DFC1406ED2B692E1C2C783BB5CE(
AA0AFA0D89
DF287DFC1406ED2B692E1C2C783BB5CE(
AA0AFA0D

6EC60FE39028887E7FE9C4B025545748953
5417A407D7 Crypto currency
6EC60FE39028887E7FE9C4B025545748953
5417A407D7

The length of the input string varies in the instances above, but the length of the output string is always 256 bits. When working with a large volume of data and transactions, this becomes considerably more complicated.

As a result, a hash is unique for each input, making it easier to keep the hash rather than the original string wherever possible. The finest example is password storage, in which the actual password string is not maintained

in the database but just the hash of the password is kept, making your system more secure. Let's look at the internals of the hashing algorithm and see how we might apply it to a blockchain.

A cryptographic hash function is a complicated mathematical technique with certain qualities that make it secure.

Deterministic—When the same input is processed several times, the result is always the same. This is critical since it will be impossible to maintain track of the input if you obtain different hashes for several repeats of the same input.

Quick Computation—The hash function should be able to return the hash of an input in a short amount of time. The system will not be efficient if the process is not rapid enough.

Pre-Image Resistance—It is impossible to detect A for any given hash value H(A),

where A is the input and H(A) is the output hash.

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Pseudorandomness—Any slight change in the input will result in massive changes in the hash. Let's have a look at it with SHA-256. Although there is only one alphabet difference between the terms Single and Mingle, their hashes are drastically different.

Mingle
5FB188B33D53EAD28780E22822A34CE1C
Single
8888A029AAF60B70574640EFD1655343D1
Single
8888A029AAF60B70574640EFD1655343D1

Collision Resistant—It is impossible for H

(X) to equal H (Y) given two separate inputs X and Y, where H(X) and H (Y) are their respective hashes (Y). As a result, each input will, for the most part, have its own unique hash.

• Puzzle-Friendly—

It is impossible to identify an input x such that H(k|x) = Y for every single output "Y" if k is chosen from a distribution with high min-entropy. Assume you have a “Y” as an output value. It is impossible to identify a number X such that the hash of the concatenation of k and x produces the output Y if you choose a random value "k" from a large distribution. It's important to emphasize the phrase "infeasible," as opposed to "impossible." In reality, the mining process is based on this principle.

A few examples of cryptographic hash functions are as follows:

MD 5 generates a 128-bit hash. After that,

collision resistance was broken.

There are 221 hashes in total.

SHA 1 generates a 160-bit hash. After 261 hashes, collision resistance was broken.

SHA 256: This algorithm generates a 256-bit hash. Bitcoin is now using this method.

Ethereum presently uses Keccak-256, which generates a 256-bit hash.

Block

The most recent and current component of a blockchain is a block, which records some or all of the most recent transactions. The block is added to the blockchain as a permanent catalog once it is completed. A new block is generated each time a previous one is completed. In the blockchain, there are an infinite number of such blocks, each linked to

the next (like links in a chain) in appropriate linear, chronological order.

Every block contains a hash of the block before it. From the genesis block to the most recently finalized block, the blockchain contains detailed information about various user addresses and their balances. Here's an example of a block with the properties listed below. This is an extremely simplified block that is not a Bitcoin clone.

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Block structure (Fig. 7.2)

A sequential number that identifies a block. The number once is a random number.

Tx, which is the information about the transaction itself. The previous block's hash is called Prev.

Hash, which is the data's computed hash value, and Nonce.

Every string will have its own unique hash value, as explained in the previous sections. Any slight modification in the string will result in a significant change in the Hash value. If you look closely at the hash value in Fig. 7.2, you'll see that it begins with a format that begins with four zeros "0000," which is unusual and difficult to achieve.

The hash value pattern in a block is achieved by the mining process. Miners must calculate the value of the Nonce, a random number that, when paired with transaction data, produces a hash with a pattern of four leading zeros. The block is deemed signed when this hash is generated. A miner obtains the block reward and the block is put to the blockchain if he or she signs the block before any other miner.

Mining

Miners join the Bitcoin network by installing the Bitcoin core software and setting up a node configuration on a computer with sufficient resources. After you've finished building the setting, you can start thinking about what you want to do next.

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Figure 7.3 shows the mining procedure.

The miner downloads the first block, which synchronizes nodes in the network, and points the node to the best blockchain's tip.

When a node (computer) performs a network transaction, the transaction must be broadcast to all other nodes in the network. To ensure that the transaction is genuine, each node in the network must solve a mathematical problem. The node must vote YES when it has been confirmed.

For the transaction to be successful, at least 51 percent of the nodes on the network must vote YES. Mining is the process of verifying a transaction using distributed processing, and miners are the nodes involved in this verification process. For a job well done, the first node that verifies the transaction receives a small reward. The mining process is depicted in Figure 7.3.

A Bitcoin transaction does not become part of the shared ledger (the blockchain) until it is confirmed and included in a block, which is done through a process known as mining. In Bitcoin, the mining process serves two purposes:

Mining creates new Bitcoins in each block, similar to a central bank printing new currency. The quantity of Bitcoin generated every block is set and gradually decreases over time.

Mining establishes trust by guaranteeing that transactions are only validated if the block

containing them has received sufficient computational power. More blocks necessitate more computation, which leads to an increase in trust.

Bitcoin's trust structure is based on computing at its core. In a process known as mining, transactions are grouped into blocks, which require a large amount of work to prove but just a small amount of compute to validate as proven. Bitcoin mining is meant to be incredibly resource-intensive and challenging so that the number of blocks found by miners each day remains constant. As a result, a nice approach to describe mining is to compare it to a

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Every time someone solves the problem, it resets, and the complexity automatically changes so that it takes roughly ten minutes to solve. The Bitcoin puzzle is based on a

cryptographic hash that is asymmetrically tough to solve but easy to verify and may be changed in difficulty. Finding such a solution, referred to as "Proof of Work" in blockchain terminology, necessitates millions of hashing operations every second over the whole Bitcoin network.

The Proof of Work algorithm includes hashing the block header and a random number with the SHA256 cryptographic algorithm until a solution emerges that matches a specified pattern. The first miner to develop such a solution wins the round and the block is added to the network. Miners create a new block every 10 minutes, which contains all of the transactions since the previous block.

New transactions flow into the blockchain network on a regular basis from user wallets and other sources. These transactions are collected into a temporary unconfirmed transaction pool by each Bitcoin node as they enter the Bitcoin network. When miners

create a new block of transactions, they choose the unverified transactions from this pool and attempt to solve a tough problem (Proof of Work) to establish the new block's legitimacy.

Continuing where we left off in the previous episode, our dinner man, who also happens to be a miner, is now seated in front of his ASIC processors, mining for Bitcoins. As a result, his computers, along with thousands of others, are now attempting to uncover the Proof of Work. Let's assume, for the purpose of argument, that Harry discovers the solution before the rest of the network.

When a solution is identified, all transactions within the block are validated, and the block is not sent to the network publicly. All nodes have now received the new block and are searching for the Proof of Work for the next block (which includes the new transactions) (Fig. 7.4).

The difficulty of the Bitcoin mining network

is a measure of how tough it is to find a new block. Every 2016 blocks, it is recalculated to a value that would have resulted in the previous 2016 blocks being generated in exactly two weeks.

Figure 7.4: Mining rate control

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At this level of difficulty, everyone has been mining. This will produce one block every ten minutes on average.

Transactions are added to the new block, with the highest-paying transactions being included first and a few other criteria for inclusion. A miner who receives a block confirmation from the network has lost the competition and must start a new block. As soon as a miner receives the previous block from the network, they begin creating a new block of trans- acts and computing the Proof of Work for the new block. Each miner includes a specific transaction in their block

that sends a reward of newly minted Bitcoins to their own Bitcoin address.

The Bitcoin network currently pays around 12.5 Bitcoins every block, down from 50 Bitcoins a few years ago. If a miner discovers a solution that renders that block valid, he or she receives this reward for the successful block uploaded to the global blockchain. The difficulty of Bitcoin mining is a measure of how tough it is to find a hash that is less than the desired number (Fig. 7.5).

Because each new block added to the blockchain is built on top of the prior block, it adds even more computation to the preceding block, increasing the trust in those transactions. After that, the blocks that are mined

Flowchart of the mining process (Fig. 7.5)

Swammy, Swammy, Swammy, Swammy, Swammy, Swammy, Swammy, Swa

That contains your transaction acts as additional assurance; as more blocks are added to the chain, more computation is necessary. One confirmation for that transaction is each block mined on top of the one containing your transaction. As additional blocks are stacked on top of one other, it becomes increasingly difficult to reverse the transaction, strengthening the network's faith in it. By convention, any block with more than six confirmations is considered irreversible, as invalidating and recalculating six blocks would take Bitcoin significant amount of compute.

Bitcoin

In 2008, a mysterious figure known as Satoshi Nakamoto issued a white paper describing what a blockchain would look like and how to run a value system on it. Following that, he designed Bitcoin as a distributed network that keeps a chronological ledger of balances. Bitcoins are

claimed to be owned by anyone who has a record in this network. An address and transactions are recorded in the Bitcoin ledger.

The transaction determines the value, whereas the address determines the identity. As Bitcoin's popularity grew, more individuals wanted to buy it, and many retailers began to accept Bitcoins in exchange for dollars and euros. Bitcoin gradually evolved into a money system that operates on the internet and is based on blockchain and cryptography. Anyone interested in learning how Bitcoins function should read Satoshi Nakamoto's original paper. The following is a link to a copy of Satoshi Nakamoto's Bitcoin white paper, which was published in 2008.

https://bitcoin.org/en/bitcoin-paper

An interaction between a user and the system is referred to as a transaction. Let's look at a few examples to help you understand.

Facebook: A few of the social interactions between the user and the system are "Like," "Share," and "Comment."

Twitter: The basic transactions that a user does on the site are Tweet and Retweet.

Github: The developer user interacts with the system using commands such as Push, Pull, Merge, and others.

Bitcoin/crypto currency: Sending money is a transaction.

Creating a Distributed Ledger

The example below shows how a blockchain's ledger is maintained.

At 5:00 PM UTC on January 1, 2018, Dave transfers $25 to Emily. At 5:20 PM UTC on January 1, 2018, Dave sends $15 to Joan. At 5:45 PM UTC on January 1, 2018, Joan sends $56 to Mike. At 6:00 PM UTC on January 1, 2018, Mike transfers $35 to Emily.

As you can see, transactions are added to the block in chronological order by the transaction's time, and all transactions in a block chain are immutable. This assures that no one can deceive the system into making a double spend. In addition, blockchain is a distributed system.

The majority of the world's banks operate on a centralized structure. If the bank is hacked or has financial difficulties, everyone's money is lost. Blockchain is a decentralized system in which all nodes in the system have access to the entire database of all transactions. To bring the system down, at least 51 percent of the nodes must be hacked, which is nearly difficult. A centralized and a decentralized system are depicted in Figure 7.6.

During the time I was writing this book, Bitcoin had crossed 500,000 blocks. In the next chapter, we'll go into blockchain and Bitcoin in further detail. In this chapter, I'm only touching the surface of crypto money so that we can grasp the fundamentals. Bitcoin is

the first crypto money that has been proven to be both sustainable and widely accepted.

Alternative coins, or altcoins for short, are all other crypto currencies. At the time of writing, there are over 1000 different altcoins. As more people began to buy Bitcoins, it got more expensive and harder to buy one whole Bitcoin, which currently costs $9000 at the time of writing. You may, however, purchase a satoshi, which is a fraction of a Bitcoin.

In the future, satoshi may grow more expensive, but that will take a long time. Let's take a look at the price pattern of Bitcoin over the last year to see when demand began and how the value is maintained (Fig. 7.7).

Figure 7.6: Decentralized vs. centralized system

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Figure 7.7 shows a graph of the Bitcoin price. (Image courtesy of CoinMarketCap.com)

Wallet for Cryptocurrencies

Crypto currency wallets are software apps that hold your public and private keys, connect to numerous blockchains, and let you to check your balance, send money, and do other tasks. When a wallet user delivers you Bitcoins or any other sort of digital currency, they are effectively signing off on the coins' ownership to the sender's wallet address.

The private key stored in your wallet program must match the public address to which the currency is linked in order to actualize the funds. If the sender's and receiver's public and private keys match, the balance in your wallet program will grow, while the sender's account balance will decrease. There isn't a physical exchange of coins. A change in balance in your crypto currency wallet and a transaction record on the blockchain are all

that is required to complete the transaction (Fig. 7.8).

Let's look at an example to better grasp this approach. Let's pretend Mark is a customer who already has a Bitcoin wallet and is ready to receive funds.

When Mark creates a Bitcoin account, his wallet program will produce a private key and its accompanying Bitcoin address at random.

His Bitcoin address is nothing more than a number that correlates to a key that he might employ to restrict access to the monies. There is no link between that address and a particular account.

Until this address participates in a Bitcoin transaction as a sender or receiver (recipient) of currency posted on the Bitcoin ledger (the blockchain), it is just one of the many possible addresses that can be used in a

Bitcoin transaction.

Once an address is associated with a transaction, it is added to the network's list of identified addresses, and Mark can check his balance on the public ledger (explained later).

The Development of a Distributed Ledger

Figure 7.8: Wallets for digital currencies

Let's imagine Mark operates a coffee shop and one of his customers, Harry, opts to pay for supper using Bitcoins. For his customers to be able to pay with Bitcoins, Mark has put his address or the QR code of his Bitcoin address at the top of the menu board at his shop. This is the wallet's public key, which is required to receive funds. Let's say the cost of dinner is $100.

100 millibits is the equivalent of 0.10 Bitcoin. If Harry is using the blockchain mobile wallet on an Android phone to transfer the Bitcoins to Mark's account, he will see a screen requesting two inputs:

Receiver: The transaction's Bitcoin destination address.

The quantity of Bitcoin to transmit is called the value.

A feature called send via QR code is available in most crypto currency wallets. There is a little indicator that looks like a QR code around the entry area for the Bitcoin address. This allows Harry to scan the barcode with his smartphone camera instead of typing in Mark's Bitcoin address (for example, 1Cdid9KFAaatwczBwBttQcwXYCpvK8h7FK which is quite long and difficult to type. The Bitcoin address is filled in by the mobile wallet application scanning the QR code, and

Harry may double-check that it was scanned correctly by comparing a few numbers of the address to the address presented by Mark. The transaction's Bitcoin value, 0.10 Bitcoin, is then entered by Harry. After that, he presses Send to send the transaction.

Harry's mobile Bitcoin wallet creates a transaction that sends 0.10 Bitcoin to the address provided by Mark, using funds from Harry's wallet and Harry's private keys to sign the transaction. This informs the Bitcoin network that Harry has authorized a value transfer from one of his addresses to Mark's new one. The transaction immediately spreads over the Bitcoin network since it is sent via the peer-to-peer protocol. Most nodes in the network receive the transaction in a split second and see Mark's address for the first time.

Mark will be able to see the transaction online if he has a system with him. The Bitcoin ledger is a public file that is constantly growing and records every Bitcoin

transaction ever made. That means Mark must do everything he can to help Mark.

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Figure 7.9: A real-world Bitcoin transaction

do is search the blockchain network for his own address and see if any cash have been transmitted to it. By entering his address in the search box on the blockchain.info website, he can do so quickly. He'll see a page on the website that lists all of the transactions to and from that address. If Mark is keeping an eye on that website, it will update shortly after Harry presses Send to show a fresh transaction depositing 0.10 Bitcoin to his account. This transaction is depicted in Figure 7.9.

Because the transaction has been propagated to the network but not yet entered to the Bitcoin transaction ledger, Mark's address will initially reflect the transaction from

Harry as "Unconfirmed" (blockchain). A miner must pick up the transaction and include it in a block of transactions in order for it to be included in the blockchain.

The transactions within the block will be approved as "verified" by the network and available to be spent after a fresh block is created—which takes roughly ten minutes in the current circumstances (Proof of Work and validation process). Everyone may now see the transaction as soon as it is included in a newly mined block. Mark now has 0.10 Bitcoin in his possession, which he can spend. Mark can purchase something with the Bitcoins he currently has.

Wallets come in a variety of shapes and sizes.

There are five main types of digital currency wallets available, each with its own set of features for securely storing and accessing your funds. Wallets can be divided into three categories: software, hardware, and paper.

The Development of a Distributed Ledger

Desktop wallets are built for PCs and Mac computers and must be downloaded and installed. They can only be accessed from the same computer where they were installed once they have been installed. Although desktop wallets are more secure, if your computer is hacked or infected with a virus, you risk losing all of your assets.

Online wallets are web-based applications that may be accessed from any computer in any place. Online wallets are simple to use, but they keep your private keys in a centralized online storage system that is administered by a third party, making them subject to hackers and theft.

Mobile wallets are software programs that you may download and install on your smartphone from your favorite app store. These are the most versatile wallets, as they may be used anywhere, including retail

locations. Due to resource restrictions on mobile devices, mobile wallets are simpler than desktop wallets, but still provide the majority of the essential functions required for most transactions.

A user's private key is stored in a hardware wallet, such as a USB drive. By keeping the user's private keys in an offline storage location, hardware wallets let users to conduct online transactions in a highly safe manner. Hardware wallets can be used with a variety of protocols and can store several crypto currencies. Users connect the wallet via USB to an internet-enabled computer, log in with their PIN or password, and begin conducting transactions. Hardware wallets are more expensive, but they are the best wallet for serious crypto currency investors who believe that investing a little amount of money to secure the private keys is vital to protecting the value of the assets they control on the blockchain.

Paper wallets are a non-electronic, entirely

unconnected method of storing private keys. They're essentially a printed version of your public and private keys. It's an old-school method of keeping your secret hidden from others. Transferring Bitcoin or any other type of cryptocurrency to your paper wallet is simple and requires sending coins from an electronic wallet to the public address indicated on your paper wallet's printout. You'll need to move cash from your paper wallet to a software wallet in order to withdraw or send coins to another wallet. Sweeping is the name given to the process of manually entering your private keys or scanning a QR code that is generally printed on the paper wallet.

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Wallet Safety

Wallets are secure to varied degrees, depending on the type of wallet and the software provider, as we described in the previous section. Due to the centralized

storage of private keys, online wallets are inherently riskier, exposing users to the electronic platform's flaws, which can be exploited by hackers to steal your assets on a blockchain in rare situations. Hardware wallets, on the other hand, are extremely safe because they keep users' private keys offline, but they come at a cost and make it impossible to retrieve your keys to make transactions. Although online wallets are vulnerable to cyberattacks, it is always a good idea to use cautious when using any sort of wallet.

Always keep in mind that losing your private keys is the same as losing your money. Whatever wallet you choose, you must exercise tremendous prudence and extreme caution!

There is no way to recover lost currency or reverse a transaction if your wallet is hacked or if you send money to an incorrect address or to a scammer. Let's have a look at some safeguards that will keep you from losing a

lot of money.

Backup Your Wallet Keys—Backing up your wallet keys can save you a lot of time and aggravation. Anything can happen at any time, such as losing your phone or having your computer fail. Backing up your crypto currency wallets can save the day and turn a major crypto-crisis into a little issue that can be resolved without losing any of your crypto cash.

Cold Storage—When crypto currency private keys are developed and stored in a safe offline environment, it is referred to as cold storage. Anyone with high-value crypto holdings should invest in cold storage. Hackers are attracted to online computers, so they should not be utilized to store large amounts of Bitcoin.

Hardware Wallet—A hardware wallet is a physical device designed to keep your crypto money safe. When you make a payment request, the hardware wallet's API produces

and signs the transaction, as well as providing a public key that the API sends to the network. The signing keys will never leave the hardware wallet as a result of this. Advanced functionality like multi-signature transactions are supported by hardware wallets.

Multi-Signature—Wallets are a type of sophisticated security configuration that is supported by the majority of popular wallets and is available on most crypto currency platforms. A trans-action entails the participation of numerous parties. When you set your Bitcoin address to multi-signature, you'll need to have another user(s) sign the transaction with you before it can be broadcast to the blockchain network. BitGo introduced the first multi-signature wallet to the market in 2013.

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FRAMEWORK FOR ICO REGULATION AND REPORTING

Richard Thompson, Marvin Loh, and Sarah Swammy

There are high expectations for blockchain-based solutions to "revolutionize" everything from financial markets to the way we identify human identification for billions of people all over the world. The financial industry was the

focus of the first blockchain solutions, but the trend has since shifted to include a wide range of sectors, the majority of which have a social impact.

Technology is enabling society to experiment with new solutions and business models in today's environment. Blockchain is a type of technology that has the potential to address enormous inefficiencies, alter social sector operations, and improve our way of life.

The intrinsic properties of blockchain, such as immutability, decentralization, and transparency, aid in the development of trust across numerous systems. In this chapter, we'll show how blockchain can have a scalable social impact while also identifying the factors that need to be disclosed in order to mitigate challenges.

Consider a few real-world examples: blockchain applications might assist establish identities for people who don't have ID cards, introduce finance and banking services to

underserved communities, and increase the transparency and efficiency of aid delivery to refugees. Governments all around the world are taking steps to put land registry data on blockchains in order to increase transparency and avoid third-party corruption and manipulation.

Increased access to capital, tracking health and education data across generations, and upgrading voter records and voting systems are just a few of the many potential social impact applications of blockchain.

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Figure 8.1: Unusual behavior combinations

While developers work on these types of solutions, the societal effects of blockchain can be strong and long-lasting. From the

design, application, and development approach, blockchain has the potential to have a big influence. The introduction of block-chain technologies has long-term repercussions for society and people, given its potential. This chapter explains why reporting is so important with blockchain and provides a framework for policymakers and social impact groups to use to make proper design decisions that enable reporting from the start. Technology is not neutral, as social media, crypto currencies, and algorithms have demonstrated.

The code has values incorporated in it. It's critical to comprehend how the problem is identified and by whom, who is constructing the solution, how it's developed and executed, who has access, and what regulations are created, as these have both intended and inadvertent consequences. It is crucial to recognize that seemingly harmless design choices have enormous ethical ramifications on people's lives when it comes to blockchain applications and implementation. It is critical

to ensure that the system has adequate provisions for the desired degree of reporting.

Reporting Design Considerations

Once blockchain is established as an acceptable technology, it is critical to examine the following areas of interest to ensure that the system has adequate reporting coverage. Guiding questions identify the effects of design choices on end users and communities at each step.

Framework for ICO Regulation and Reporting

What is the process of establishing and maintaining governance?

What is identity, and how is it defined and established?

Verification and Authentication—How do inputs and transactions get validated and authenticated?

What is the process for defining, granting, and executing access?

Data Ownership—How is data ownership defined, awarded, and carried out?

Security—The process of establishing and maintaining security.

Governance

The establishment and maintenance of the rules that control the entire blockchain system is referred to as governance. A basic feature of block-chain technology is the existence of a set of rigorous rules that control all transactions within the system. In the social sector, it is vital to guarantee that technology is driven by a good human governance framework.

Who establishes the rules, who maintains the system, how the rules are executed, and how a blockchain system is closed out are all aspects of governance. The project's governance structure should also be in charge of ensuring that the project's guiding principles and design philosophy are followed.

The following are the most important design elements for Governance reporting:

Identifying the stakeholders, their roles, and the mechanisms through which their roles are established.

Establishing governance processes, norms, and regulations (both tech- nical and otherwise).

Making it possible for these rules and roles to evolve over time.

Having a plan in place for whether or not to shut down the system if key stakeholders

leave.

Identity

What constitutes "identification" and to whom identity is provided in a blockchain, as well as how identity information is utilized, accessed, and safeguarded, are all important ethical questions. A digital identity is made up of several bits of identifying information that come together to make a whole.

Blockchains can be used to create transactional or limited digital identities for gaining access to information or services. Blockchain technologies can also be used to create portable, basic digital identities. Digital identities that are both portable and foundational

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are the identities that are permanently tied to a single individual and may thus be used to show identification or credentials in a number of contexts while travelling with the individual.

The following are the most important design concerns for Identity reporting:

• Recognize who is given identity in this situation.

• Recognize the level of solution identity.

It's worth noting that a transactional identity can also be thought of as a limited-purpose identity. It allows a person to have one-time or restricted access to a certain service.

A foundational identity, on the other hand, is a fully functional identity that can be utilized for a variety of reasons over time.

• Decide which identifiers will be used to

create this object.

• Prevent personally identifying information from being exposed on a blockchain.

This may necessitate never directly storing personally identifying data on a blockchain.

Authentication and verification

In an open ledger system, input verification and authentication are critical. The process of certifying information on a blockchain is fraught with difficulties. The transaction authentication procedure is closely linked to the verification process for digital assets such as crypto currency or digital photos. It's done to see if the party who started the transaction has any control over the asset in question.

When a non-digital item, such as a person or an object, is linked to a blockchain, the verification process becomes more complicated since human interaction is

required, which poses a variety of political, legal, and ethical issues. How can someone's claim to land ownership, for example, be verified?

The primary design considerations for reporting on Verification and Authentication are as follows:

• Determining how and by whom initial entry, or "zero state," data input will be verified, as well as how user transactions will be authenticated.

This entails establishing information vetting methods as well as technical mechanisms to prevent invalid entries.

• Ensuring that the established procedure is trusted by all parties.

• Recognize any possible economic, legal, political, or social consequences of consensus protocol algorithms.

Controlling Access

Framework for ICO Regulation and Reporting

For anyone utilizing and engaging with a blockchain system, access definition, grant, and execution are crucial. Furthermore, if individuals' personal information on a blockchain is exploited, the extent of access to such information may result in catastrophic consequences for those persons.

Beyond the practicalities of viewing or writing to a blockchain, access also encompasses more ethereal problems about digital literacy and the system's functional capacity to access it.

The following are the most important design considerations for Access Control reporting:

Who has the authority to write?

Who has the authority to read?

The method by which the permissions are granted.

The level of access granted to users.

Ownership of Data

There are several critical questions to consider, including who owns the data, who exercises control over the data, where and how the data is stored, and how errors are corrected. One of the most intriguing features of blockchain is its capacity to give consumers functional control over data.

It has the ability to provide answers to questions like who owns the data, who exercises control over the data, where and how the data is stored, and how wrong data is corrected. The Sovrin Foundation, for example, is developing a self-sovereign identity trust framework that establishes a strong governance system that allows people to have positive control over their personal digital identity data.

The following are the most important design considerations for Data Ownership reporting:

Understanding who, in name and in practice, owns data.

Knowing and comprehending the manner in which stakeholders will be able to use and benefit from the held data.

Choosing whether to store data outside or in the blockchain.

Decentralized data storage methods are being considered.

Creating a procedure for people to flag and correct false information.

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Security

Data can be dispersed throughout a distributed infrastructure. As a result, the vulnerabilities are reduced when compared to data that is aggregated and stored in a single area. Passwords do not need to be remembered by users. It is also unnecessary for them to link their personal information, such as emails or phone numbers, to databases of stored data. However, there are ethical issues to consider.

Encryption algorithms and public/private key pairs, which are similar to a publicly known "address" and a private digital key, are used to essentially unlock the mailbox at that address in blockchain security. Blockchain technology is increasingly being utilized to protect private information such as medical data.

This refers to a user's comprehension of potential hazards as well as private key management on a personal level. This refers to potential vulnerabilities within and outside the system at the system level. What would

happen if a digital key needed to control assets or medical information was lost?

The following are the most important design considerations for Data Ownership reporting:

• Determining who is in charge of establishing security and who is in charge of breaching it.

• To guarantee that data that is vulnerable is effectively safeguarded from existing and future risks.

• Choosing how different types of data will be safeguarded.

• Developing a mechanism for gaining access to private keys in a secure and efficient manner.

Ecosystem of the Blockchain

Any blockchain solution is powered by an ecosystem that includes the following elements: the user, community, existing infrastructure, and financials. As a result, doing an ecosystem assessment is critical from a reporting standpoint. This evaluation will aid in comprehending and appreciating the responsibilities that each of these main components performs in the blockchain-based solution. These components' functions are primarily connected through a network of complicated interactions. These responsibilities may change as the project progresses. Ecosystems, on the other hand, are not static; they are constantly changing.

Framework for ICO Regulation and Reporting

& change during the course of the project's life cycle It's critical to comprehend not only natural changes in the ecosystem, but also how the implementation and design of a blockchain solution may influence (speed up or slow down) these processes. The

assessment should be repeated on a regular basis to inform and evaluate critical design decisions. As the project progresses, it should be updated and revised.

Users

The end users of a blockchain tool must be identified at the commencement of the ecosystem evaluation, and the ecosystem must thus be understood from their perspective. This end-user perspective necessitates extensive study and discussions. It also entails an inclusive design process to thoroughly comprehend the end users' identities, needs, vulnerabilities, and any other dangers they may face. All of these demands, vulnerabilities, and hazards must be assessed in their current state, as well as their potential evolution in future con- texts.

Questions for User Evaluation

Who are the people who utilize it?

The users' most important vital characteristics.

Users' digital literacy Users' contextual literacy.

The end consumers of the targeted outcome are the reason for this.

Users' requirements/objectives

The way in which these may evolve through time.

Vulnerabilities that users have.

The way in which these may evolve through time.

Users are at risk.

The way in which these may evolve through time.

Community

In addition to identifying blockchain end users, their identity and community must also be understood. This includes comprehending the community's (or communities') boundaries. It's also important to comprehend the dynamics inside and between them. When considering a community, it's critical to evaluate the dynamics and structural forces at play, as well as the roles and interactions of all community members, regardless of whether they're direct blockchain end users. To develop this kind of understanding, community members must work together to identify, for example, who might be able to provide a good or service that is critical to the desired outcome, who might be able to provide the identity required to access that good or service, and who might be able to authenticate the validity of the identity claims.

Questions for Community Assessment

The community's relevant limits, which include physical, social, cultural, and economic factors.

There's a chance that these lines will collide.

Relationships in the community that are crucial.

In the community, the holder of nominal power.

In the community, an effective power holder.

The method by which power distribution is established.

Possibility of having individuals of the community who are marginalized or vulnerable.

Internal threats to specific members of the community are a possibility.

Is this a formal or informal relationship?

The community's relationship with external actors.

The different external organizations with which the community has links.

The relationship with the entire community or a section of it.

External dangers to members of the community are a possibility.

Framework for ICO Regulation and Reporting

Needs and objectives at the community level.

The potential for change in the future.

What are the vulnerabilities at the community level?

What are the chances that these will change in the future?

What are the risks at the community level?

How do you think these will alter in the future? (Think about technological advancements, climate change, and power shifts.)

Infrastructure

It is critical to comprehend the architecture that links community members together in order to achieve a new desired outcome. This infrastructure could include legal and regulatory frameworks, public policies, informal rules or processes, as well as data and other assets. It is possible to obtain the required result by utilizing these structures. It could potentially cause stumbling blocks or friction during the implementation of blockchain tools.

From design to development, deployment, implementation, and sustainment, to the potential termination or transition of blockchain tools, the ability to produce friction for these structures could occur at any step of the project.

Questions about Infrastructure Assessment

The method by which the current infrastructure achieves the desired result.

Where in the process is there room for improvement (in terms of time and money)?

The prospect of a fully new blockchain system replicating this advancement.

If not, the method of balancing the opportunity costs of sticking with the previous system.

Policies, legal and regulatory frameworks, informal systems, cultural and social systems, and other processes that may influence the

desired outcome are all factors to consider.

The infrastructural components that could be utilized in a block-chain solution.

Factors or dynamics that may obstruct or prohibit the solution from being implemented.

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Data that is currently available.

Data ownership is a term used to describe who owns the data.

The data's accuracy.

Is there universal or sufficient acknowledgment of its correctness?

The accuracy of the data.

The data is presented in its entirety.

The method by which it is kept.

Financials

Financial incentives promote the implementation of a blockchain tool at every level of the project life cycle. As a result, it's critical to comprehend how a blockchain would be funded and who would profit financially from its adoption. Understanding who will be harmed financially as a result of its execution, as well as how financial constraints might affect key design decisions, is equally crucial.

Financial Evaluation Questions

The entity that is creating a blockchain has financial motivations.

The method by which the blockchain would be financed at each level of its development.

Who would profit financially from the adoption of a blockchain, and how?

Financial incentives are required to keep the current system running.

Who would be damaged financially if a new blockchain was implemented?

The blockchain finance model's long-term viability.

Are there any financial constraints that would influence design decisions?

Would the design decisions made as a result boost or diminish user utility?

Would the design decisions that arise enhance or lessen user risk?

Reporting

Framework for ICO Regulation and Reporting

As centralized initiatives to implement a regulatory framework around digital currencies in general are diligently launched, it is critical for entrepreneurs in this space to be proactive and forward-thinking and implement a reporting framework for any portal that a client encounters in a crypto currency enterprise.

Reporting frameworks are frequently incorporated into platform designs and are frequently backfilled or outsourced to third-party software. Because of the highly regulated nature of the security sector, it is more wise to take no chances and make developing a reporting system a top priority. One of the many advantages of designing the portal around a governance structure is that the reporting system is simple to implement.

According to Chap. 4, a natural reporting structure can be built based on a governance framework that combines participant management adhering to roles, activities, and event entitlements. A broad parameterized reporting platform is a natural fit based on the governance framework.

Each individual or entity that wishes to become a member of the network is assigned a unique encrypted ID once they are onboarded within the network through a registration process. To comply with KYC standards, general information about the participant, as well as supporting documents, is collected during this process. All data is verified before being accepted, with those who pass the validation procedure being accepted and those who do not being rejected.

Although it may appear to contravene the privacy and anonymity principles of crypto currencies, the KYC process is required. The crypto firm can achieve harmony by separating the marketplace architecture

design, which determines the context and transaction nature of the currency, from the underlying payments system, which permits decentralized transactions components.

Without a defined market based on historical analysis, crypto currency would be a game played by a small number of software and technology aficionados. It would be nearly hard to reach critical mass without a marketplace.

The marketplace is the value-added surface that makes digital currency relevant. A solution has been found to protect entrepreneurs who are daring enough to advocate digital currency innovation from facing major legal implications while still running a successful business. As previously explained in Chap. 4, the governance system has a natural reporting structure because participants are recorded utilizing a private, highly secure network, a VPN.

Individuals' unique IDs and location details

will be included in the data model created. Additional data that is critical to the reporting process, such as

Swammy, Swammy, Swammy, Swammy, Swammy, Swammy, Swammy, Swa

Dates such as the initial registration date, the process date, and the member date must all be documented. Using these three sorts of dates reports, actual dates that players registered, and implementing this notion at a minimum will provide a means to report on how efficient the marketplace is. The time between an initial registration and when it was formally acknowledged and started to be processed will give you an idea of how efficient the marketplace's administration and registration procedure is.

The time difference between the initial registration date and the member date, minus the lag from the process date, would provide an indication of the individual's efficiency in supplying the verification documentation

required to meet registration standards. The portal's owners can use these subtitle factors to gain insight about the portal's aging efficiency. If the verification process takes longer than expected, they warn owners that people may be supplying false information in order to have verified documents in place.

As members come online and their accounts become active and able to retain currency, it is best for owners to have as much insight as possible because they are the ones facing a legal risk. The governance system, which consists of events and actions, will keep track of member account activity and position holdings. These facts begin to define some common reports, such as a personal account summary, that must be implemented within any bank account administration. Let's look at the overall layout of the reporting framework before laying out the personal account summary.

Based on the login roles, the portal will allow users to report on their experiences. If the

person is a site administrator, their reporting privileges are different from those of an individual user. Different reporting features may be available to different users. It is necessary to focus on administering reporting roles, individuals assigned to roles, and rules on activity levels that exceed rule thresholds to meet the basic compliance requirements. Facilities to provide regulatory reporting to governing agents, in addition to site administrators giving regulatory information to governing agents

Individual members are also required.

Parametric reporting is made feasible by having the underlying infrastructure to build indexes and tagged data elements from a defined data model. Designing the reporting foundation and implementing the Application Programming Interface is the most important step in creating a feature-rich user reporting experience, according to best practices. Start by indexing out responsibilities to offer a minimum reporting set to satisfy regulators

using the natural generalized architecture.

Each role category will have its own ID, which could be a numeric ID assigned by the system. Make sure the model has an alpha identification that is up to a particular length and a description element that provides more information.

Framework for ICO Regulation and Reporting

The reporting function can offer a viewable list of the participants' dichotomy as roles are established. The following positions would be formed as a result of Chap. 4 architecting the LUCKY DOG world:

ldr0001 is the unique identifier for this item. ADM is the role code. Administrator's name site administrator and entitlement officer (description)

Identifier: ldr0002 roleCode:VNDR Vendor's name proprietor of a business services firm

Additional roles, such as owner, authenticator, and economic participant, are developed in this way. Id, rolecode, and name are elements that could be indexed out to allow for a parametrized role search. Users, action kinds, and acctActivity are some of the other data entities developed as part of the design. Creating, at the very least, the required design of reports that can be generated and list user users of a specific role.

Reporting requirements could be met by listing the following reports: The ability to index out data elements within the framework to run queries and deliver a result set is known as parameterized reporting. Entrepreneurs can extend the base configuration and produce fully enriched services by following these principles view all roles table 8.1

Roles

RoleCode

Name

Description

Site Administrator and Entitlement Officer ADM Administrator

Vendor Service Proprietor (VND)

AUTH Authenticator of Pure Canine Breed Validator

BRDR BRDR BRDR BRDR BRDR BRDR BRDR BRDR

OWNER OF A PURPOSE-BREED CANINE

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View of Table 8.2

_all rolesByID

VND's Roles

RoleCode

Name

Description

Vendor Service Proprietor (VND)

view all users (Table 8.3)

Users

Name Address

First Last Country Provence City email Role

ADM

Susan Jones USA

Wi Madison

OWN

MEX CDMX Mexico City Maria Gomez

AUTH

BRZ Sao Paulo Osaco Luis Rodriguez

View of Table 8.4

_all usersByID

Users

Name Address

Susan Jones USA

Wi Madison

OWN

View of Table 8.5

_all userByRole

Role AUTH

Name Address

First Last Country Provence City email Role

MEX CDMX Mexico City Maria Gomez

AUTH

Framework for ICO Regulation and Reporting

Figure 8.2: Summary of Accounts

Aside from the profile report and activity reporting, an account summary displaying coin holdings and current market value is

required.

Dimensions

A platform that exposes dimension is used in a more advanced sort of reporting and analysis. Three dates were added to the user record in our data model: reg- Date, procDate, and memDate.

The use of categories and specialized dates allows for dimensional analysis. User account balances over a specified time period can be used to generate a time series. In addition, reports necessitate the creation of categories with the ability to index on those categories.

Analytics

It's a natural use case for big data analysis as more and more data is produced and collected. The blockchain will record canine breed transactions, selling prices set by specific breeders, grooming services, and

authentication prices in our LUCKY DOG marketplace. Artificial intelligence technologies that can build data sets can be used to interrogate the blockchain.

These data sets are sampled at various times and supplied into a machine-learning engine. As the data sets for these neuronetworks develop, they will be able to produce rankings in dog breeds, breeders, suppliers, and many other categories. As specific users' behaviour is investigated through the blockchain, service recommendation lists can be built by the sets.

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Auditing and Financial Reporting

The LUCKY DOG marketplace includes the components needed to construct reports for managing users, tracking daily activity, and calculating theoretical values for individual

holdings. To stay in business and avoid being accused of being a rogue marketplace, the owner should establish a proper auditing reporting system.

Because transactions are taking place and tokens or crypto currencies are regarded as financial assets of value, it is safe to construct a regulated professional auditing system that adheres to industry norms.

Large corporations frequently contact CPA auditors in the reporting of audited data because they aid in the smooth operation of a multibillion-dollar capital markets system. CPA auditors work under strict guidelines and adhere to the highest auditing standards and professional norms of conduct.

To guarantee balanced reporting, these CPA companies are always independent. To ensure that a corporation's financial statements do not contain major misstatements, CPA auditing specialists follow thorough objective-driven procedures and apply

professional skepticism. They also establish whether internal financial reporting procedures are effective in some cases.

The involvement of a competent CPA in the auditing process is critical to many sectors' integrity. However, blockchain technology has the benefit of immutable record keeping, raising the question of whether this powerful technology may significantly reduce or remove the need for a CPA-audited financial statement.

Examining the process further demonstrates that blockchain has limitations when it comes to reporting. Any entrepreneur with a crypto market, on the other hand, has a regulatory responsibility to have a proactive framework in place from the start.

The blockchain can correctly and reliably deliver a verifiable transaction between a breeder and a buyer, as our LUCKY DOG market example indicates. The blockchain, on the other hand, is unable to determine

whether a dog that has been delivered is in good health or devoid of physical deformities.

As a result, blockchain records may not always provide sufficient audit evidence on the transaction's nature. A transaction on a blockchain could still look like this:erroneously classified carried out by non-independent parties unlawful, deceptive, or illegal is linked to a "off-chain" side agreement.

Framework for ICO Regulation and Reporting

Furthermore, estimated values may find their way into blockchain transactions. A reconciliation of historical and estimated values is required. Independent auditors are required in such situations.

As blockchain use grows, central places may be better able to acquire audit data. For auditors, these centralized enriched data

become invaluable resources, hence standard techniques for obtaining audit information straight from the blockchain should be developed.

To ensure that the data is reliable, proper cleansing controls are required. As data travels to the public blockchain, it must be carefully assessed to see if the cleansing operations, workflow, or protocols can be tampered with or compromised under certain circumstances. Because many of the entities will not have control over the auditing data, these preventive analyses are important.

Corporate activities such as using blockchain for formal financial reporting in the audit process may necessitate an update and reevaluation of management accounting standards for digital assets and liabilities.

Currently, neither international financial reporting standards nor domestic accounting rules directly address these policies. Professional auditing organizations must

update their audit methods to take advantage of blockchain's benefits while also addressing the inherent risk.

Given that myriad files containing data for reconciliation, account information, journal entries, extracts, subledgers, supporting spreadsheets, and trial balances are delivered to CPA auditors in a variety of digital and manual formats, the opportunity to streamline financial reporting is more appealing for many institutions than the effort of overcoming the reporting complexities associated with the blockchain.

The importance of streamlining this procedure cannot be overstated. The ability for CPA auditors to access near real-time data from read-only nodes on the blockchain is crucial, and it gives a significant cost benefit in terms of time and money.

Accessing information in the blockchain will likely become more efficient as more entities and activities migrate to blockchain solutions. For example, if a major class of transactions

for an industry is recorded in a blockchain, a CPA auditor may be able to design software to audit firms using the blockchain on a continual basis.

Many manual data extraction and audit preparation operations, which are labor-intensive and time-consuming for an entity's management and staff, might be eliminated. One of the biggest critiques of financial reporting is the gap between transaction and verification dates, which can be reduced by speeding up audit preparation processes.

By allowing management and auditors to focus on riskier and more complicated transactions while reducing lag time, it may be possible to improve the efficiency and efficacy of financial reporting and auditing.

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carrying out routine auditing in near-real time Auditors might use blockchain-enabled

digitization to deploy more automation, analytics, and machine-learning capabilities, such as alerting appropriate parties about anomalous transactions in near real-time. Contracts, agreements, purchase orders, and invoices, for example, could be encrypted and securely kept or linked to a blockchain. The speed of financial reporting and auditing may be increased if CPA auditors had access to unalterable audit evidence.

While the audit process may become more continuous, auditors will still need to use professional judgment when analyzing accounting estimates and other management judgements used in the preparation of financial statements. In addition, for areas that become automated, internal controls over the data integrity of all sources of relevant financial information will need to be evaluated and tested.

A CPA, particularly CPA auditors, may be able to provide assurance to blockchain customers because blockchain technologies

standardize transaction processing across various businesses. Because of their skill sets, independence, neutrality, and competence, the CPA may be able to fill a prospective future function. The list of prospective new jobs for a CPA that follows is merely indicative and not exhaustive; significant regulatory and professional impediments may still exist before a CPA may take on these tasks.

Smart Contracts and Oracles Auditor

Smart contracts, as previously mentioned, can be implemented in a blockchain to automate business processes. Contracting parties may want to hire a third-party assurance firm to ensure that smart contracts are implemented correctly. A CPA auditor could also check the connection between smart contracts and external data sources that cause business events.

Users of blockchain technologies are at risk of undetected mistakes or vulnerabilities if

they do not undergo an independent examination. To take on these tough jobs, CPA auditors may need to broaden their skill set, which might include knowing technical programming languages and blockchain functionalities. This type of position also creates critical issues for the auditing profession, such as:

• How can certain professions' skill sets be redefined to be relevant?

• What factors might influence the risk of an assurance engagement?

• What is an assurance provider's ongoing role after a smart contract is published on the blockchain?

Framework for ICO Regulation and Reporting

Management will be responsible for creating controls to evaluate whether the smart contract source code is consistent with the

intended business logic as part of a financial statement audit. Management's controls over the smart contract code are likely to be considered by an independent CPA auditing an entity with smart contracts/blockchain. Many businesses, on the other hand, may opt to utilize smart contracts created by other blockchain users. Future auditing standards and guidelines may need to take into account this technology, clarifying the function of the CPA auditor in those situations.

Consortium Blockchains Service Auditor

Users of the system may want independent assurance as to the stability and robustness of its architecture before launching a new application on an existing blockchain platform or utilizing or subscribing to an existing blockchain product. Instead of each person completing their own due diligence, using a CPA to accomplish these goals may be more efficient.

Furthermore, crucial blockchain aspects (such

as cryptographic key management) should be built with sophisticated GITCs that provide continuing protection for sensitive data, as well as processing controls over security, availability, processing integrity, privacy, and confidentiality. A trusted and independent third party may be required on a regular basis to offer a quantitative assessment of the effectiveness of controls on a private blockchain. This form of service poses a number of key issues for the profession, including:

Who is the client while offering assurance over a blockchain?

How would a CPA analyze the danger of an autonomous system's engagement?

How might blockchain users be affected by independence rules?

Administrator's Role

Industry-accepted blockchain systems could

benefit from the administration of a central access-granting function by a known, neutral third party. This role could be in charge of identity verification or a vetting procedure that a participant must go through before being granted access to a blockchain. This central administrator might ensure that the blockchain's protocols are followed and enforced. If a single user/node of the blockchain receives an undue benefit, this could be considered unethical.

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carried out administrative duties. This particular approach might jeopardize consortium members' trust. Because the administrator is in charge of the entire blockchain, extreme care must be taken while defining his or her position and legal responsibilities. An independent CPA may be capable of fulfilling this role as a trusted professional. This job, however, would present additional concerns for the

profession:

Is the assurance provider autonomous from the blockchain participants by taking on such a key role?

Could the CPA auditor audit those participants' financial statements?

Function of Arbitration

Business agreements can be complicated, and even the best-intentioned parties might end themselves in disagreements. In the future, an arbitration function for a permissioned blockchain may be required to resolve conflicts among consortium-blockchain participants.

This duty is similar to that of an estate executor, which is often undertaken by a variety of trained professionals, including CPA auditors. This type of function may be required by blockchain participants to enforce contract requirements where the spirit of the

smart contract differs from that of a legal document, contractual agreement, or letter.

Additional considerations should be made to see if an arbitration function is required. If CPAs desire to take on this responsibility, they must first address the following key questions:

What kind of legal framework would be used to resolve disagreements?

What skills do you think a CPA auditor would need?

Could this function wind up posing unanticipated risks to attest clients' independence?

The acceptance and application of blockchain in the auditing function is moving at a breakneck pace. Furthermore, the full scope of how the technology will effect the industry as a whole is unknown due to numerous unknowns. CPA auditors are beginning to

incorporate blockchain transactions in the organization auditing process, indicating that blockchain is gaining traction in the sector. Although adoption will accelerate, blockchain technology will not be able to replace financial reporting and auditing statements in the near future. Any suspicion of a rogue business activity will be reduced if a marketplace provides a clear auditing feature.

ANOTHER BLOCK OF CRYPTO CURRENCY

in the Value Exchange Continuum

Dan Castro is a well-known figure in the

The book's remaining chapters go on the specifics and inner workings of crypto currency. This short chapter merely examines the opportunity and risk of adopting a new method of exchanging value or conducting business. This chapter will also avoid the

hyperbole surrounding crypto currency—there will be no discussion of revolutionary technology, new economic paradigms, or disrupting history; rather, this chapter will examine this new medium of exchange and how it may or may not do more than provide people with another option for buying and selling goods and services.

Historical Context

Simply said, crypto money is the newest way for people to buy and trade products and services. People used to barter between themselves before there were any currencies, either exchanging goods for goods or exchanging services for goods. The use of precious metals (gold, silver) or commodities (grains, animals) as a medium of trade evolved over time. Coins of various sizes, forms, and materials were used as money in the next iteration of exchange, and most coins had intrinsic value based on the materials they were made of.

Paper currency eventually became the standard of exchange. Paper money has been backed by land, precious metals, and other valuables at various times. Until the Great Depression, the majority of the world's industrialized nations relied on the Gold Standard to back their currencies, where the value of gold was determined by the price of gold.

Crypto Uncovered, S. Swammy et al., https://doi.org/10.1007/978-3-030-00135-3 9

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The worth of their currencies was linked to the amount of gold they had in storage to back them up. The Bretton Woods Agreement established the "gold exchange standard" after WWII, putting the official exchange rate at $1.

Gold costs $35 per ounce. The United States abandoned the gold standard in 1971, leaving

supply and demand to determine the value of its currency. Since then, the relative value of currencies has been supported not by a single asset, but by the creditworthiness of governments and the public's belief in their ability to repay any debts owed to them.

The abandoning of the gold standard relieved governments of the necessity to hoard significant amounts of gold, but it also prompted countries to find new ways to ensure currency stability as their currencies "floated" freely against one another.

New financial instruments such as options, swaps, and futures have allowed currencies to be exchanged in novel ways over the last few decades. Credit cards, debit cards, and other methods of sending money (wire transfers) have boosted the velocity and volume of currency or money transactions for consumers.

Currency has progressed from being tangible to being digital in the current day. Crypto

currencies, unlike sovereign currencies, do not have a tangible form on paper and are exchanged or traded in computerized digital settings.

Wallet Security for Cryptocurrencies

Crypto currencies are based on a large network of peer-to-peer computers that share an immutable, distributed database known as the block chain. All of this is covered in detail in other chapters. While the network's cryptography appears to be secure, the mechanism of accessing it—crypto currency wallets—might not be much safer than credit cards.

A cryptocurrency wallet is a piece of software that keeps track of the public and private keys needed to interact with the blockchain. You could lose your crypto currency if your crypto currency wallet is compromised. Desktop wallets are crypto currency wallets that are designed to be used on computers. Your crypto currency is at risk

if your computer is compromised.

Some crypto currency wallets are cloud-based and can be accessed from any computer, but clouds, like credit cards, are managed by a third party, thus hacking and theft are a risk, just as they are with any third-party database. Smartphone-specific mobile wallets are convenient, but cellphones can be hacked, misplaced, or stolen. Hardware wallets, which are kept in devices such as USBs, are extremely secure unless the USB is lost, stolen, or broken. Finally, there's paper.

Another Block on the Value Exchange Continuum is Crypto Currency.

Crypto currency wallets are nothing more than paper copies of your public and private keys, making them no more safe than paper money.

Given the foregoing, crypto currency wallets do not appear to give any more security than other data you save on your computer, in the

cloud, on your smartphone, or in your own personal physical wallet, depending on the form of the wallet.

While the blockchain as a distributed record is secure and immutable, the crypto currency wallet, which is used to access the blockchain, is no more secure than traditional methods of transferring goods and services. Your crypto currency is at risk if your private key is stolen or compromised.

The Following Link in the Chain

Cryptocurrencies will not, for the time being, supplant sovereign currencies as the primary medium of exchange for goods and services. Cryptocurrencies, on the other hand, are a feasible supplement as an alternate means of exchange for everyone with a computer or smartphone. Acceptance and utilization of goods and services by both consumers and merchants is perhaps the most difficult

problem. Several sovereign nations are developing and/or enhancing legal frameworks and infrastructure to support crypto currency growth, development, and security.

Government regulators will need to ensure that money laundering, fraud, and predatory or criminal activities are controlled or eliminated in the same way that security regulations are managed or destroyed. Simultaneously, merchants and sellers of goods and services will be required to accept crypto currencies and will be protected in the same manner that they are when customers use credit cards.

A credit card transaction is accepted and processed in a matter of seconds; a typical Bitcoin transaction takes about ten minutes for the blockchain to be validated. If crypto currencies are to be broadly recognized and used by the general population, this could be a big issue. This isn't surprising; it's just another stage in the growth of blockchain

technology and how we do business.

THE BERMUDA FINTECH STORY: A VISION FOR THE FUTURE

Sarah Swammy, Richard Thompson, and Marvin Loh are E. David Burt, Sarah Swammy, Richard Thompson, and Marvin Loh.

It will take the commitment and collaboration of governments, technological companies, and academic institutions to promote the types of advances we've described throughout the book. This relationship has the potential

to contribute to long-term economic growth and societal improvement.

We are at a critical juncture in history, where technological advancements have given us both the gift and the responsibility of vast volumes of data, as well as the means to understand and build new frontiers in a variety of sectors.

One of the most widely discussed innovations is crypto money. Technology has made it possible for anybody to produce and trade digital currency, putting the power of participation in the hands of the general population in a decentralized and unregulated manner.

At its most basic level, government is responsible for protecting its citizens, establishing behavioral guidelines, and ensuring their well-being. In this spirit, the government is responsible for recording and archiving life's most basic and essential events and occurrences.

The birth certificate is issued by the government when a kid is born. When the same youngster grows up and buys a house, a car, votes in elections, and possibly marries, the government records and stores that information. Finally, when that same person dies, a death certificate is issued by the government.

Crypto Uncovered, S. Swammy et al.,
https://doi.org/10.1007/978-3-030-00135-3
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The Potential of Blockchain

Because the government's role in capturing and keeping information and data is so important, they have an unchanging obligation to have a system that is based on trust. Citizens must have faith in the government's ability to protect their personal

information and data. The most basic information and data of our residents must be protected from hacking and breaches both within and beyond our state and country.

In a world where governments must provide a safe sanctuary for preserving and transferring documents, the nature and technology of blockchain appear to be very promising. Blockchain's distributed nature and trust verification procedure have immense potential for our government, and it must be fast-tracked and deployed as soon as possible. The implementation of these basic technologies can result in a more transparent and efficient government, as well as societal benefits.

The Premier of Bermuda, the Hon. E. David Burt, JP, MP, uses the working example "The Bermuda FinTech Story: Building on a reputation for innovation and collaboration" to demonstrate the implementation of these themes.

Building a FinTech Ecosystem in Bermuda

on a Track Record of Collaboration and Innovation

Bermuda's Brief History

What is the location of Bermuda? Bermuda is portrayed on the earliest known map, which dates from 1505. The island, which is located in the North Atlantic Ocean, was found and named after Spanish adventurer Juan de Bermudez.

It wasn't until 1609 when settlers on their journey from England to Jamestown, Virginia, were shipwrecked and landed after being shipwrecked during what is thought to be a hurricane. The Bermuda storm is said to have saved the lives of settlers in Jamestown, Virginia; those who survived the storm rebuilt their boats and carried wild hogs, fish, birds, and eggs, all of which were plentiful on the island. The immigrants that arrived in Bermuda were able to feed their fellow

settlers, who were starving to death according to all historical records.

The British claimed and colonized the little island, which is 21 miles long and 1 mile wide at its widest point, from 1612.

The Bermuda FinTech Story: A Vision for the Future

Bermuda evolved into a modern culture during the next 400 years:

The Bermuda Court of General Assize was founded in 1616, and the first bank was created in 1858.

Electricity was first introduced in 1904.

1946—The first broadcasting firm is created, and automobiles are widely used.

The Constitutional Order of Bermuda took effect in 1968, and the first general election

was held with universal adult suffrage.

Bermuda is a British Overseas Territory with its own government.

The Economic Situation

Bermuda's economy in the seventeenth century was based on whaling, shipbuilding, tobacco cultivation, and the beginning of the salt-raking trade with the Turks and Caicos Islands.

Slavery, which was not abolished in Bermuda until 1834, drove the economy between the 1600s and the 1800s. As a result of the English-European wars in the 1700s, Bermuda developed a privateering economy.

During the 1800s, vegetable exports, particularly Bermuda onions, to the eastern US, as well as the production and transportation of Bermuda Easter lilies (Lilium longiflorum) and bulbs, were the

mainstay of the economy.

With moderate temperatures, magnificent scenery, and a location less than 700 miles from the United States, Bermuda became a popular vacation destination for wealthy Americans in the late 1800s and early 1900s. “You can go to heaven if you want to,” author and comic Mark Twain famously said. "I'd rather stay in Bermuda," says the narrator. Until the 1980s, tourism was the mainstay of Bermuda's economy, when it was gradually supplanted by international commerce, which began to emerge as a viable economic choice for the island.

Insurance and reinsurance, captive insurance, life and annuity insurance, insurance-linked securities, asset management, trusts and private client vehicles, family offices, shipping and aviation registries, shipping finance and ship management, arbitration, filming and technology, and life sciences are all part of Bermuda's international business portfolio today.

Bermuda has earned a reputation for insurance and reinsurance innovation and collaboration throughout the years. Industry specialists collaborate closely with the government and the Bermuda Monetary Authority to develop unique solutions to meet the demands of clients. Bermuda has a long history of being first—the

S. Swammy et al., 176 S. Swammy et al., 176 S. Swammy

Captive insurers, excess liability carriers, property catastrophe insurers, and "cat" bonds were among the first in the globe. The island, which has a population of about 65,000 people, draws sophisticated clientele who want to do business in a modern, well-regulated, solutions-oriented environment.

Bermuda's FinTech Initiative

Bermuda's FinTech story began against this

economic backdrop in November 2017, when the Government of Bermuda established a Blockchain Task Force, which consisted of two groups charged with developing an ecosystem based on industry knowledge and an understanding of industry needs, as well as preparing Bermuda to be a leader in this new technological space. Bermuda's goal was to introduce ground-breaking legislation that would draw on the island's strong reputation as a world-class regulator while also addressing the needs of business leaders in this new technology.

The Legal and Regulatory Working Group was entrusted with creating a solid, acceptable legal framework to oversee FinTech-related products and services. To ensure that the issues about digital assets were adequately addressed through legislation, the group brought together worldwide consultants and business leaders with local regulators, technical officers, and specialists.

There had never been a jurisdiction with the combination of experience, ingenuity, agility, and drive to navigate the world of digital assets legislatively before Bermuda. This tiny island nation is pleased to be at the forefront of shaping the FinTech industry's regulatory future.

Components of Legislation

Legislation on Initial Coin Offerings

Bermuda's government made history in April 2018 when it drafted and laid legislation governing initial coin offerings in the House of Parliament (ICOs). To enable this new form of business, Bermuda's Companies Act 1981 and the Limited Liability Company Act 2016 were revised. The legislation is an important component of Bermuda's FinTech regulatory framework.

The Bermuda FinTech Story: A Vision for

the Future

To benefit from Bermuda's regulatory environment, individuals must first establish a Bermuda-based firm or a limited liability company (LLC) and be subject to Bermuda's business entity rules. This also means that beneficial owners of businesses wishing to launch initial coin offerings (ICOs) in Bermuda will be verified by the Bermuda Monetary Authority and must meet Bermuda's severe money laundering and terrorist financing criteria.

Bermuda's corporate mandate is compliance, cooperation, and openness, which implies that if a valid international tax authority seeks information about a company's beneficial owners, Bermuda will give that information in accordance with the applicable treaties.

The Act also establishes baseline standards that will apply to all ICOs, regardless of the rights, functionality, or features of the digital

asset being sold. Specifically:

There are standards for the disclosure of information about the digital assets' rights and functionality, timetables for any project to be funded using ICO revenues, and disclosure of any dangers that may affect those who purchase the digital assets.

There are precise standards for verifying the identity of all buyers of digital assets, including circumstances when increased due diligence is necessary; and

To guarantee that purchaser identity information is readily available when it is required. For such information, there are also record-keeping requirements.

An application to issue an ICO from Bermuda must contain a copy of the white paper, and it will be reviewed by a government-appointed Review Committee

comprised of legal, regulatory, and technical experts. If additional information is required or if new laws apply to the intended issuance, applicants will be notified. The Bermuda Ministry of Finance will provide permission to conduct the ICO if the firm fulfills the Bermuda Standard.

The Digital Asset Business Act of 2018 is a law that regulates the business of digital assets

The Government of Bermuda submitted the Digital Asset Business Act in the House of Parliament on Friday, May 11, 2018, two days after the ICO law was passed. The Act has since been passed by Bermuda's House of Assembly and Senate, as well as receiving the requisite assent for enactment.

S. Swammy et al., 178 S. Swammy et al., 178 S. Swammy

This bill is a world first in terms of establishing full regulatory oversight for service providers of digital assets and related products. Bermuda has added a vital component to its FinTech strategy with the enactment of the Digital Asset Business Act, while continuing to rely on the Bermuda Standard.

The Bermuda Monetary Authority will administer the Digital Asset Business Act, which is expected to serve as a global model for regulating digital asset service providers. The Act is built after Bermuda's Money Service Business Act 2016, the Insurance Act 1978, and the Investment Business Act 2003, and is designed to be generally consistent with Bermuda's regulatory approach for other highly regulated business activities. A tiered licensing structure, anti-money laundering (AML) and anti-terrorist financing (ATF) protocols and prudential requirements, client asset protections, auditing requirements, and enforcement measures and powers are all part of it.

Bermuda realizes that the current atmosphere makes transparency, as well as the mitigation and prevention of financial crimes, difficult. Anyone seeking a license under the Digital Asset Business Act, like the ICO legislation, will be forced to first form a standard Bermuda company, which will necessitate verification of the beneficial owners. Companies must have a physical presence in Bermuda, as well as a senior representative who will be responsible for submitting specified information to the Bermuda Monetary Authority, according to the Act. Companies subject to the Act will also be subject to a range of rules aimed at reducing the risk of financial crimes, consumer fraud, market manipulation, and unethical business activities.

Bermuda's reputation as a well-regulated jurisdiction must be preserved, if not enhanced, as a result of the country's entry into the FinTech area. As a result, similar to the legal framework in place for other financial services regulated by the Bermuda

Monetary Authority, this comprehensive regime will be implemented in conjunction with regulations, codes of practice, declarations of principles, and guidelines.

FinTech companies can use a banking service.

Bermuda's Banks and Deposit Companies Act will be changed in the summer of 2018 to create a new kind of bank that will provide services to Bermuda-based FinTech firms. The Bermuda Monetary Authority was consulted, and the amendments have their endorsement. The justification for the introduction is that the worldwide success of the FinTech industry is dependent on the ability of businesses.

The Bermuda FinTech Story: A Vision for the Future

functioning in this space to take advantage of the required financial services Banking has been the largest problem in other jurisdictions, and it has had to be overcome via creative thinking and the exploration of new solutions.

E-ID National System

Bermuda's government is working with prominent scientists to develop a national identification system for individuals and corporations. This will serve as a platform for meeting Bermuda's Know Your Customer (KYC) standards. Multiple hard copies and handwritten signatures will be unnecessary. For the government, individuals, and enterprises, greater efficiencies will be realized, as well as new commercial prospects.

Bermuda's digital arsenal of business-friendly solutions is expected to get a valuable

addition in the form of E-ID.

Registration of Land Titles

Bermuda is developing blockchain technology to improve key government services for the country's inhabitants as it develops FinTech legislation. All deeds will be converted to an electronic format in the first instance, replacing the current deeds-based system. With this breakthrough, it will be possible to put the deeds on the blockchain, making the records immutable.

Bermuda's FinTech Innovation Hub (Bermuda FinTech Innovation Hub)

The government is building a purpose-built facility for technology companies based in Bermuda to have access to a premium facility and support services in order to nurture and facilitate innovative thinking and creative solutions. A co-working space, private board room, lounge areas, high-speed internet, and

concierge services will be available to businesses.

Starting a Company in Bermuda

Existing support agencies have been dispatched to help businesses establish themselves in Bermuda. The Bermuda Business Development Agency (BDA) is an important initial step in establishing a company in Bermuda. As an independent contractor,

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The Bermuda Development Agency (BDA) is a non-profit organization whose mission is to raise Bermuda's profile through targeted business development activities that will help create jobs on the island. The BDA offers

concierge services to international companies looking to set up, relocate, or expand their operations in Bermuda.

The BDA connects potential firms with industry specialists, regulatory and government officials, as well as corporate service providers and a legal support staff to help with the company registration process. The BDA acts as a single point of contact for businesses looking to establish a presence in Bermuda quickly and easily.

WHY ARE BITCOINS THE KEY TO A BETTER WORLD, TRUE LIBERTY, AND A WEALTHY RETIREMENT?

"All wonderful ideas are potentially lethal."

Oscar Wilde was a writer who lived in the United States

Bitcoin is the gateway to a new world that is much more free, trustworthy, honest, and democratic. Of course, if we only want to utilize Bitcoins for fun, profit, and online transactions, we can do so.

But why stop there? When we use Bitcoins, we enter a system with numerous advantages, including nearly no fees for transactions such as bank wires, complete anonymity or privacy with all financial privileges, and no central bankers or governments taking your Bitcoins. Theft of bank accounts has lately occurred in the banks of Cyprus and Argentina. This, combined with global inflation, has prompted many to seek out a better banking alternative.

Bitcoin takes control of our currencies away from the people, institutions, and even governments who now control them, and instead places it in the hands of all of us. Yes,

we now have control over our own money.

Bitcoins can open the locked door of prosperity by increasing everyone's wealth and prosperity. It contributes to this by acting as a deflationary currency. Due to the limited amount of Bitcoin currency entering the system, Bitcoins automatically increase in value in relation to dollars, euros, and other currencies. This allows us to buy more items with the same amount of Bitcoins year after year.

Tax laws, bank fees, and a variety of confiscation games played by governments, banks, and "authorities" can all be avoided with Bitcoin. While this is a contentious use of Bitcoin, this book would be incomplete without a discussion of Bitcoin's privacy features.

If we move money from our traditional bank account to a friend who has a bank account in another nation, for example, the following rules and costs may apply:

It's possible that we won't be able to send the money. Cuba, Sudan, North Korea, Iran, Belarus, Syria, Burma, Zimbabwe, and other countries that the US has sanctioned for commerce, including (at one point or another) Cuba, Sudan, North Korea, Iran, Belarus, Syria, Burma, Zimbabwe, and others. (And who knows what will happen tomorrow..)

Outbound fees will often range from $25 to $50, with inbound fees ranging from $25 to $50.

Banks have the option of blocking the wire or returning the funds within 48 hours. In addition, depending on the transfer restrictions, the receiver may be able to withdraw even more money from our account.

Banks frequently convert foreign currencies at a discount in order to make a profit.

in the midst of our transfer

For better or worse, both parties are now known to the bank and the government.

The government has the authority to levy taxes on funds transferred outside of the country. For foreign banks that do not follow US banking standards, this can be as high as 30%. That is infuriating!

Not only do banks charge exorbitant costs for transferring our funds, but they can also take up to 24 hours or even longer in some circumstances. We are paying Ferrari prices for the performance of a moped.

This is just a small example of the financial difficulties that come with utilizing conventional currency, the US dollar, and regular banking.

The following is what a Bitcoin transaction might entail:

There are no bank fees.

There are no costs for buying or selling foreign money.

A tiny service fee of $0.25 (yep, you read that correctly - one quarter) from a site like dwolla.com

It is unnecessary for anyone to know who the buyer or seller is. All parties have complete privacy.

Any country, any person, and any transaction can take place at any moment.

There will be tax consequences based on your reporting rather than a bank reporting on you.

The best part is that our Bitcoin transfer will be almost instantaneous. The recipient can access his or her new hoard of Bitcoins as soon as we press SEND, and continue his

cigar factory tour of Cuba with no one knowing. I'm hoping he returns with several Bolivars as a token of our gratitude!

They can then transfer the Bitcoins from his Bitcoin wallet to his overseas bank account via an in/out exchange like mtgox.com or another exchange.

Bitcoin is deserving of all the attention it is getting because it has so many benefits and only a few minor drawbacks. This tutorial will show any reader how to join the growing number of people who are converting to Bitcoin. Bitcoin has the potential to be the story of the century, with its low-cost money transfers, convenient shopping, safe wealth preservation, and, ultimately, independence.

WHAT YOU CAN DO WITH THIS BOOK

"Holding a cat by the tail teaches you lessons you couldn't learn any other way."

Twain, Mark

With the possible exception of How to Mine for Bitcoins, novice Bitcoin users or individuals who have never heard of Bitcoin will benefit from reading the majority of the chapters in order. If all one wants to do is use Bitcoins, that part may be of little service.

After reading this guide, any Bitcoin conversation will sound familiar and understandable, with the exception of the most mathematically complex ones.

If you've purchased a few Bitcoins and conducted some transactions with them but still have concerns about the future, the numerous potential and risks associated with Bitcoin, the only chapter to skip is the one on How to Use Bitcoins. Even Nevertheless, there are likely many Bitcoin users who may benefit from suggestions, strategies, and security measures that they aren't taking but should.

The most useful sections for a seasoned Bitcoin user will most likely be about profitably trading Bitcoins (Profiting with Bitcoins) and Bitcoin predictions for the future (Future of Bitcoin and Alternative Currencies). Though this is by no means a thorough trading tutorial, even a seasoned Bitcoin user may learn some of the science and art of buying and selling Bitcoins,

resulting in more regular earnings. Furthermore, the future of Bitcoin, while difficult to predict, presents the best trading opportunity of all. Either make it long with everything we have, or make it short to the ground. Depending on the timing, both might yield large profits. These problems and their answers will become lot clearer as a result of trading skills.

Being the world's fastest growing financial phenomena implies that things are changing by the minute.

Sign up with: to stay up to date on the latest Bitcoin developments.

www.publisherswebsite.com

In addition to:

www.financialsurvivalcenter.com

Bitcoin trading advice and trend predictions are now part of the Financial Survival Center

wealth preservation and profit creating system, using the same trading methodology that recognized the gold and silver bull and bear markets, the dot-com bubble, real estate bubbles, and biotech chances.

Bitcoin Fundamentals: An Overview

“Do you believe that money is the source of all evil?” Have you ever wondered what the source of all money is?

Ayn Rand was a philosopher who lived in the United States.

The new digital, internet-based form of currency is referred to as Bitcoin. While delving deeper into the basic notion of Bitcoin becomes more complicated, understanding the mathematics underpinning Bitcoin's formation and operations is not required. While the genius behind Bitcoin hums away in the background, we can use,

profit from, and generally understand what Bitcoin is and why it is vital in our daily lives.

Best of all, our foray into the Bitcoin realm has yielded numerous advantages. In terms of money, we can spend less on Bitcoin transactions while seeing our ability to acquire items expand as the value of Bitcoin rises. Of course, value increases are not assured. If we go that road, our privacy will become practically impregnable.

With almost no effort, we can set up an internet business that accepts Bitcoins (such as fees and complications we would encounter trying to accept credit cards).

Even the modest inconvenience of learning new phrases and concepts appears to be a small price to pay for the gold mine of benefits Bitcoin provides. The future treasure Bitcoin promises to bring is still a long way off, but it is crucial. Those prospective benefits will be discussed in the last chapter

since they have the potential to be game-changing, and there is still a lot of ground to cover before we get there.

Bitcoin's story is reminiscent of a Tom Clancy thriller. There are spies on the loose. The cause is being sold off by trusted double agents. Murders, or near-murders, do occur. Innocent men are sentenced to prison. Criminals have amassed vast fortunes. Risk takers have lost larger sums of money. Before fighting each other tooth and nail, geniuses, lunatics, Libertarians, Socialists, government forces, and Anarchist hackers collaborated. (Okay, I'll confess that this is a slight exaggeration, but you get the idea!)

Given that Bitcoin is up against some of the world's most powerful forces, we wouldn't expect anything less. Bitcoin is winning the battle, based on its quick rise from $0.06 to over $200 (and subsequent drop to roughly $100).

The battle between David and Goliath is

taking place right in front of our eyes, and the outcome is as expected.

The little guys (us) are throwing the powers that be in charge of the money universe and government (PTB - powers that be) off. Hello and welcome to the fascinating new world of Bitcoin. You will be ecstatic that you did came.

WHAT EXACTLY IS A BITCOIN?

Bitcoin is mainly a fictitious piece of software with no inherent value. Gold has intrinsic worth since it can be used to make jewelry, some electronics, make teeth, coat mirrors, and a variety of other things. Silver has even greater intrinsic value for medicinal applications, film, bearing coatings, heat dispersion, and electrical qualities, among other things. Bitcoins, gold, and silver all have one thing in common: they're all digital. They're all quite uncommon.

Bitcoins are similar to the prizes awarded for correctly solving a math problem. Both the

problem and the solution are one-of-a-kind. There will be a limit of around 21 million of these special solution prizes known as "Bitcoins" (the precise amount will be 20999999.97690000).

Bitcoin is referred to as a "crypto-currency" by those who dabble in its sophisticated details, such as programmers and promoters. This made-up phrase refers to the type of arithmetic that determines the rarity of the answers that win Bitcoin rewards.

Bitcoin's nuts and bolts are as follows:

Bitcoin is commonly abbreviated as BTC, with 1 BTC equaling 1 Bitcoin.

We can also work with 0.1 BTC and 0.01 BTC in the same way that we would with dollars.

1 cent is also known as $0.01 USD. It contains tech behind it, similar to Bitcoins, that enables for a very small denomination of a Bitcoin that looks a little scary:

0.00000001 BTC is a one-thousandth of a billionth of

or one-hundredth of a Bitcoin

In honor of the genius who created the entire coding architecture, this smallest unit of BTC is lovingly known as a "Satoshi." We utilize the same nomenclature from the metric system for discussing Bitcoin denominations, which isn't particularly common.

CentiBitcoin is also a bitten and has the appearance of.

1 catch or 1 BTC MilliBitcoin is either a bitmap or an mbit:.001 BTC or 1mBTC, respectively.

For the time being, that's about all we'll require. The microbat or obit, with.000001 BTC or 1 uBTC, is the tiniest and most fashionable BTC for purists.

Let's hope we all stored up on BTCs before

the attack of the 5 zeros if we find ourselves trading in uBTCs shortly!

THE USE OF BITCOINS

Bitcoins can now be used to make purchases. Because Bitcoins are still too new, not fully understood, and rather risky, no cars, planes, diamonds, or fuzzy dinosaur feet are accessible with them. Many shops, on the other hand, are warming to Bitcoin; here's how a Bitcoin shopping payment appears on a website named Bitcoin:

It's worth noting that the prices are already in.001 BTC format. The reason for this is that Bitcoin's value has skyrocketed in comparison to other currencies. Bitcoins are valued in our native currencies. The US dollar, or USD for short, is our national

currency if we live in the United States. Euros or € are used by the majority of Europeans.

Bitcoin was a 6-cent underdog right out of the start, with 1 BTC trading at 0.06 USD. So the identical products that are presently priced at 0.294BTC would have been around.416 BTC in 2009-2010, when Bitcoin was still a baby. We should expect Bitcoin to continue to move deeper into the bit cent, ambit, and even obit values now that it is a rapidly increasing online payment method.

Keep this excellent example in mind as we discuss why Bitcoin is one of the secrets to personal and financial independence in a later part.

What Is Bitcoin's Origin, and Why Is It Important?

Bitcoin was officially founded in 2009 by a mysterious guy (or group) known only by the Japanese moniker Satoshi Nanomotor. In the

United States, his name is as popular as John Smith's. To summarize, we have no idea who invented Bitcoin. For a very vital purpose, he kept his true identity hidden.

Bitcoin.org is a domain name that was formed in Helsinki in 2008 from whois.org. According to one version, the system was created by three cryptography-savvy programmers, none of whom were Japanese. Neal King, Vladimir Osman, and Charles Bree are the men behind one of the relevant patents #20100042841. All three have filed patents in the fields of encryption and network management.

Fastcompany.com published an excellent essay arguing for the three-man origins of Bitcoin (http://www.fastcompany.com/1785445/Bitcocrypto-currency-mystery-reopened/Bitcoin-crypto-currency-mystery-reopened/Bitcoin-crypto-currency-mystery-reopened/Bitcoin-crypto-currency-mystery-reopened/Bitcoin

All three potential inventors, predictably, strenuously deny any involvement.

According to the Atlantic Wire, Michael Clear, a British programmer, is the brains behind Bitcoin. He rejects it as well. (http://www.theatlanticwire.com/technology/2unmask-Bitcoin-inventors-43535/)

With no one claiming to be Bitcoin's creator, anonymity becomes one of the currency's greatest assets. There is no founder to imprison. There isn't a single Bitcoin bank that can be shut down. Bitcoin is not controlled by a single person, woman, or organization.

Bitcoins are created by a distributed network of people who run Bitcoin miners. Later in this book, we'll talk about Bitcoin mining. The lack of a central processing or regulating place for a currency is a significant issue. Governments, hackers, banks, and common criminals may all assault and frequently destroy that central authority.

Alternative currencies are being pursued by governments. The government was enraged by the popularity of e-gold, a precious metal-backed electronic currency. Dr. Douglas Jackson, the company's founder and CEO, was on the verge of being sentenced to 20 years in prison.

Several concepts for Bitcoin-like currencies have come and gone. Digi cash, introduced in 1994, was an early attempt at a central, online, digital currency based on code-breaking mathematics. Later, Peppercorn was a code-based form of digital currency that also failed.

What these early initiatives lacked was a method of disseminating the currency's ability to generate it. We could all go gold or silver prospecting, just like in the real world. Some of us might even come across some valuable metals. Only a few, very few, of us will strike it rich. That is exactly what Bitcoin has to provide.

Satoshi Nakomoto's brilliance stems from the fact that he figured out how to make his idea broadly adopted. Satoshi performed a number of deft moves:

Give everyone a piece of the pie by distributing the software that allows more Bitcoins to be created. This is what Bitcoin mining is all about.

There is no central authority or founder in charge of the currency.

Make it work like currency by allowing for irreversible transactions.

Maintain the integrity and transparency of the entire system. Everyone has a copy of the ledger, which contains all of the Bitcoins.

If we act quickly, we may be able to obtain a sizable portion of the Bitcoin pie. Bitcoin multi-millionaires already exist. Many more people are likely to join those privileged ranks after reading this book. Bitcoin is still

in its infancy.

WHY SHOULD I INVEST IN BITCOINS OR USE THEM?

"Nations are devastated not by a single act of violence, but by the steady and nearly unnoticeable depreciation of their circulating money as a result of excessive quantity."

Copernicus, Nicholas

There are three main reasons to invest in Bitcoins:

Money or value is transferred from one

Bitcoin user to another (one of the smartest Bitcoins uses)

Here's a table that compares the prices of a few different ways to send money:

Paypal:

The transfer is free and limited in value as a gift. The restrictions can range from around $100 to $10,000 in a single transaction, depending on whether an account is confirmed, how long it has been active, and other factors. Fees are expected to be around 2.5 percent. A $1000 transaction will result in a transfer of $975.

WU (Western Union):

General transfers run from $500 to $3000, while foreign exchange transfers can cost up to $10,000. For cash pick-up in minutes, fees range from $5.00 to $95.00. The medium price range is around $50. WU's $1000 will be received as $950.00.

Banks:

Wires will cost $30 inbound and $30 outbound. It can be as much as $50 each way. For example, sending $1000 through bank wire will result in a transfer of roughly $940.00.

Peconic, Bullion Vault, Goldmine, and others are some of the other digital online currency competitors. They are primarily used for electronic storing of wealth in precious metals, rather than for purchasing goods.

Bitcoin:

Transfer $1000 in value at nearly no price using Dwolla.com or even directly through a person-to-person encounter. When receiving more than $10, the maximum a person might pay is about $0.25.

The recipient's account would be credited with $999.75 in BTC value (for today's date, that would be roughly 9 BTC).

Investing in Bitcoins to protect our riches.

This is not always a profitable strategy. Bitcoins are quite volatile. Prices soared into the triple digits before plummeting by half in less than six hours. (April 10 – April 1, 2013)

The range of an investment is described by financial analysts using the term "beta." The risk of an investment is measured by beta, which is also known as volatility. Penny stocks, junk bonds, and several commodities are examples of high beta investments. Treasury bonds, German bonds, and other low-beta investments are examples. Bitcoins are classified as having an extremely high beta. Bitcoin's beta will gradually rise to a range of 1.15-1.5. This forecast is predicated on increased fungibility and sustained adoption.

All markets, including currencies, are subject to variation. Only when markets rise as quickly as Bitcoin did do they set themselves up for an as rapid fall.

Bitcoin was created with the intention of having a limited supply. Limiting the number of Bitcoins that can be produced is designed to create a currency that appreciates in value over time.

Here's a graph illustrating BTC's dollar value rise over time:

The values ranged from $.06 to over $200.00, which may be difficult to see. While this demonstrates that trading Bitcoin can yield significant gains, it also demonstrates the risks involved. Storing wealth in Bitcoins at this time of evolution is not the greatest usage of Bitcoin, in my opinion.

Working with Bitcoins is generally easier if you read the chapter on "How to Trade Bitcoins." Increasing wealth by simply holding Bitcoins will prove to be more effective in the future. Bitcoins are fantastic for trading right now, but not for storing wealth.

Joining the free currency movement and gaining access to all of its motivated customers.

Every month, over 600,000 people look up how to join the Bitcoin movement on the internet. For everyone in business, these are potential consumers. Currently, just a handful stores take Bitcoins (see the list in the Appendix). Any store that accepts Bitcoins for payment gets into a burgeoning market. It does not imply that a business must just accept Bitcoins. They can still accept credit cards, PayPal, or any other payment method we provide.

Using Bitcoins for commerce and selling things to the developing marketplace adds to the site's excitement, generates back links for better web rankings, and contributes to the growth of the free currency movement.

HOW MUCH DO BITCOINS REALLY COST

Bitcoins, like other modern currencies, are only value what they are traded for. Bitcoins are not backed by anything. They have no gold, silver, or any other form of value to maintain a bottom level.

How much computational power and electricity is necessary to make one Bitcoin is one possible value for the lowest amount a Bitcoin is worth. This amount varies depending on the cost of electricity in the area where the mining machines - which perform the task in exchange for a Bitcoin reward - are located. The cost of mining a

Bitcoin (as computed by PCPer.com here: http://www.pcper.com/reviews/Graphics-Cards/BitcoinMining-Update-Power-Usage-Costs-Across-United-States) is in the thousands of dollars.

The cost of a standard Bitcoin mining computer (such as an AMD A8-3850 APU) can range from $.305 to $2.50 per day. The cost of more specialized computers varies from $0.55 to $4.05 per day. The quantity of Bitcoins produced each day is determined by a number of factors.

The lowest level produced per computer is around 0.050 bitcoins, while the highest level produced per computer can exceed 3.2 bitcoins. Taking the low end of all numbers, we get the following value:

The base cost to manufacture or mine a Bitcoin is (1btc/0.0050btc/day)*$0.305/day=$61.00.

Because this level is for a non-specialized

computer, the cost of the machine is not covered.

Today's $/BTC price of $50 means that each BTC costs the least efficient miners $50.

The cost of production is $11. The most efficient miners, on the other hand, continue to make a lot of money. Here are some more optimistic mining cost estimates:

Using the high-end production numbers as an example:

For higher scale efficient miners, 1/3.2 BTC/day*($4.05 power + $8 computer)=$3.77 basic cost.

Because the $/BTC exchange rate is currently above $100 (and climbing), a large-scale Bitcoin miner may generate money even at a $/BTC exchange rate of roughly $0.01 $4.00.

This shows that Bitcoins are based on the concept of rarity. With a BTC production,

you get a lot more bang for your buck

There is a fairly steady expansion built into the system, with a cap of around 21 million BTC occurring in 2140.

It is critical to have a firm understanding of what inflation and deflation are. Bitcoin is thought to have anti-inflationary qualities. Not so fast, my friend.

While it appears that Bitcoins can only be issued up to a total of 21 million, with only roughly 12 million currently in circulation, the reality is much different. It's around a 100 millionth of a millionth of a millionth

Remember the Satoshi, the smallest unit of Bitcoin? It is the equivalent to 1/100,000,000 of a Bitcoin.

We can observe that Bitcoins are not nearly as deflationary as they appear when we add up the available units of Bitcoins in relation to other currencies.

The current total amount of Bitcoin units accessible is 1,200,000,000,000,000, or around 1 million billion.

That isn't a deflationary figure. Even said, most computations use the 1 BTC unit rather than the smallest denomination. However, as seen above, Bitcoin has the potential to inflate into amounts that most of us cannot pronounce. That hasn't happened yet.

Understanding what inflation and deflation mean in the real world is crucial. Then we'll be able to predict how Bitcoin - or any other money - will perform over time.

Inflation is defined as the quantity of cash and debt injected into a system in relation to the growth of goods and services. Take note of what has been highlighted. Many observers are preoccupied with the increase of money and debt, overlooking the expansion of goods and services.

Bitcoin's daily growth rate is at 0.46 percent,

while its decay rate is only 0.025 percent. Decaying is the process of Bitcoins being used up or vanishing from the pool of available Bitcoins, similar to how bad debts cause money to vanish from a system. Bitcoins will generally tend to increase in value compared to large national currencies such as the USD, Euro, or Yen, with a net growth rate of 0.44 percent each day and slowing.

Here's an example of a critical comparison:

Bitcoin is expected to rise at a rate of 1.5-2 percent every year.

According to ShadowStats.com, the USD monetary growth rate is at 5-8 percent, based on the more accurate 1990 methodology and including estimates of M3, the broadest measure of money.

According to data from the European Central Bank (ECB), the rate of monetary growth in

the Eurozone has ranged from a low of 1% to a high of 12%. Almost all of these official figures are exaggerated. The rate of real growth of the currency and debt in circulation may be substantially higher. Growth rates are typically in the range of 5-8 percent. (See http://sdw.ecb.europa.eu/reports.do?node=100000141 for further information.)

Checking with the opposite side of the globe reveals that the Japanese central bankers have been working! The JCB (Japan's Central Bank) has offered to buy government bonds worth trillions of yen. This is nearly identical to printing trillions and then pushing them into the market. Prices will rise, possibly exploding. The JCB figures do not reflect this massive and dangerous monetary expansion, with growth rates ranging from 2 to 5%. For everyone buying actual goods and services in the market place, the truth will be felt on the street.

Bitcoins will always be more scarce than

competing national and central bank currencies, as this little currency tour demonstrates. Bitcoins have value simply because of this reality.

The Evolution Of Digital Currencies – And How Bitcoin Came To Be

"Failure is a detour, not a fork in the road."

Zig Ziglar is a famous American businessman.

The museum of previous digital currencies houses Digicash and eCash, YodelBank, 1mdc, e-bullion, ePassport, Liberty Reserve, Liberty Dollar, e-gold, and many more. The majority of these currencies failed because of a lack of market adoption. In other cases, such as with e-gold and Liberty Dollar, banks and governments shut them down because they've become too popular. The nascent currency is charged with money laundering, and then the hammer falls.

The goal of this chapter is to figure out why, who, and what is driving the powerful impulse to create universally accepted digital currencies. It's crucial to understand why past currencies have failed. If we know why Digicash vanished, for example, we can detect a similar issue with another money, such as Bitcoin, well before it loses all value.

Great stock market traders and investors, in general, have a thorough understanding of the history of their investments. They can notice trends early on, both up and down, thanks to their information. They can use this knowledge to get in early on an uptrend and get out early on a slump. Isn't that the case?

Most investors, on the other hand, get trends completely wrong.

This chapter will assist anyone learn more about the history of the digital and distributed money movement. Once you understand the background, you'll be able to navigate the future of Bitcoin with greater knowledge, and

potentially profit from a correct appraisal of the currency.

FALSE PROMISES, DIGITAL GOLD, AND DIGITAL SCAMS

Digicash, which was eventually bought by eCash, could be considered the forefather of the Bitcoin concept. This digital money was established by David Chalms, a great programmer and cryptographic expert (cryptography is the math discipline focused on constructing codes that are difficult or impossible to break for securing data). His ideas were based on some of the same notions as Bitcoin's for establishing online payment

"tokens."

Although it had been more of a promise of huge electronic currency than a reality, Digi Cash went bankrupt in September of 1998. Digi cash was unable to establish market traction after many failed commercial negotiations with Visa, Microsoft, ABN AMRO, ING, and others.

According to a January 1999 story in NEXT! Magazine regarding the death of Digi cash:

"Chaim's thesis, that Digi Cash should strive for the virtual world, was dropped. It was pointless to try to compete with the credit card firms; if you angered them, they'd squash you.

David Calm has frequently sabotaged market joint venture agreements by demanding excessive amounts of money and confidentiality. Partially due to mismanagement, and partly due to competitors realizing it could eat their lunch,

Digicash and cash disappeared.

Lesson #1: To live and develop, a digital or alternative currency must collaborate early, often, and profitably.

Knowing this, it's time to load up whenever we see Bitcoin obtaining a large store, business, or website as a user.

Between December 2012 and February 2013, this effect was on full display. Wordpress.org began accepting Bitcoins, and Bitcoin-central.com became the first Bitcoin bank. During this time, Bitcoin surged from under $20 to over $34.

Following the demise of Digicash and eCash, some hobbyists continued to work on the notion of a new digital currency.

However, something old and something new came together first, and e-gold was introduced to the market. A Florida doctor and his computer adept partner devised an

electronic currency backed by precious metals. Unlike Bitcoin or cash, the value of e-gold was supported by real gold and silver.

e-Gold grew to a user base of over 5 million people. It was a centralized currency that employed sophisticated cryptography to handle transactions. This was the final straw for e-gold.

Money laundering and other offenses were charged against e-gold and its founder by the US authorities. E-gold was completed quickly. The e-gold system is still operational, but it is no longer a functioning e-currency.

Lesson #2: A government and/or bank will shut down, jail, or destroy any alternative currency that has a central office, authority, or person.

The government will accuse the money

creator or promoter of counterfeiting under Title 18 section 471 of the United States Code, even if the new alternative currency bears no resemblance to US cash. If you are found guilty, you will be sentenced to 20 years in prison (approx.).

In 2011, Bernard Von NotHaus, the Liberty Dollar's creator, was found guilty of "creating, owning, and selling his own currency." People who bought his currency, the Liberty Dollar, made a lot of money. It had a silver back, looked stunning, and was starting to get traction.

During the trial in Western North Carolina, prosecution attorney Anne M. Tompkins described the Liberty Dollar as "a unique type of domestic terrorism" that was attempting to "undermine the country's official money" (New York Sun, March 2011).

One of the reasons why the originator of Bitcoin is mainly unknown is because he or she was imprisoned for inventing a currency.

Lesson #3: Any individual in control of a popular alternative currency will face legal action at some point.

WHY DO PEOPLE HATE BITCOIN

Alternative currencies, as we've seen in the brief history of the Internet, frequently fail spectacularly. Governments have a money monopoly. Banks have a monopoly on currency storage, distribution, transfer, lending, and exchange.

Governments are eager to tax everything and anything. That's what they're good at. Knowing who spends what and with whom is necessary for taxing transactions and people. Any alternative money that provides anonymity, such as Bitcoin, poses a difficult challenge to governments.

How will they be able to trace Bitcoins and users in order to tax them?

Governments will have a difficult time getting this information if we set up our Bitcoin accounts in a specific way and do not deposit Bitcoins back into our bank accounts. Bitcoin is viewed by banks as a threat to their wire fees, currency exchange fees, late fees, overdraft fees, and even bank vault fees. Bitcoin is despised by all types of banks, governments around the world, and the centuries-old power structure of world banking dynasties and institutions.

We can be sure they are participating, even if they despise Bitcoin.

A person recently smashed the value of Bitcoin by selling a large amount in less than an hour. Mtgox.com, the world's largest trading exchange for converting and trading Bitcoins, has been down for more than 12 hours. This caused Bitcoin's value to drop because no one could convert Bitcoin into

their own currency. In less than a day, Bitcoin went from a triple digit to virtually zero value, almost identical to a bank holiday.

Some speculated that this was a test run by banking and financial institutions, backed by government authority, to see how they could destabilize this new competitor.

While a bank or government might crash Bitcoin, any currency can be crushed in the same way by a private individual. On September 16, 1992, George Soros famously assisted in the devaluation of the British pound. Soros aggressively sold British pounds he had borrowed, forcing the Bank of England to abandon its linkage to the European Exchange Rate Mechanism. In this trade, Soros made almost $1 billion.

The majority of Bitcoin users, unfortunately, lost money when the massive seller struck.

One of the key sections of this book will instruct readers on how to avoid the value of

a waterfall plummeting. The basic rule of investing and trading is to avoid losing money.

WHY BITCOIN IS UNIQUE AND SUPERIOR TO EVERYTHING

- Nearly.

Bitcoin is difficult to shut down because no one owns it. There is every incentive for people to get involved because thousands of people create Bitcoins in what are known as mining operations. Profit motivates people to participate. Bitcoin is run on open source software. Everyone can view the code, make comments on it, and verify that it is valid.

Developers can be found in a variety of sites online, but the most popular is https://github.com/Bitcoin/Bitcoin.

Bitcoin has several amazing advantages over previous digital currencies and standard currency:

Anyone can participate in Bitcoin mining or currency creation. It's almost as if you're a gold or silver miner. It costs money to set up Bitcoin mining, and it becomes more difficult every day, just as in the real world.

Every node in the Bitcoin network is aware of all Bitcoin transactions and maintains the currency's record. This openness maintains the integrity of the system. Because each Bitcoin is vetted across the system, no one can spend the same Bitcoin twice.

The number of bitcoins available is restricted. We saw before how central banks all around the world (such as the JCB) can produce trillions of dollars in national currencies in an

instant. National currencies lose value over time as a result of money production at that level. Bitcoins are created at a slow and constant rate. As a result, the money increases in value over time.

With Bitcoin, you may work fully anonymously. This is becoming increasingly difficult to achieve. Later in the book, we go through this in further depth. It's a good idea to create an anonymous user account as soon as possible. The anonymity window is about to close - and quickly. Do not be concerned about creating a Bitcoin account that is linked to your identity. That is something we can do at any time. We also have the option of creating as many Bitcoin accounts or identities as we desire.

While other currencies, like e-gold, provided some anonymity, all records could be traced back to the e-gold website. Furthermore, all user IDs remained on the e-gold servers. During the federal operation, they were eventually seized. Many records for

ostensibly private, anonymous parties were readily handed over by e-gold. In a nutshell, centralized currencies can't ensure perfect privacy. Bitcoin does a decent job doing this by dispersing all transactions rather than relying on a single clearinghouse or central database.

There is no chance of a counter-party in Bitcoin. It has been mathematically proven and is backed up by evidence. Someone or anything backing a money or certificate poses a counter-party risk.

The constitution defines the US dollar as follows:

Secretary of the United States Treasury Alexander Hamilton set out 24.057 kilos or 371 4/16 grains of pure silver in 1792.

The dollar can no longer be exchanged for silver at a US bank. The US government is the counterpart to the value of the US dollar. Our government has broken its own law by

refusing to give the dollar's worth.

Bitcoin is not backed by a third party. There is no chance of a default on the value of a Bitcoin. Almost all other digital currencies backed by gold or silver are vulnerable to counter-party risk.

By remembering key codes that define our access to Bitcoins, we can store them in our minds. Because other currencies have a central clearing house, this is not possible. If the central clearing house or controlling monetary authority restricts access to the account, even a well remembered code will not operate. This denial of account status occurred only in Cyprus, and it coincided with a bank holiday in the United States during the Great Depression. Bitcoins are valued for Bitcoin transactions as long as they check out as valid against the Bitcoin ledger. No one can stop them from being spent.

Bitcoin is a strong and resilient currency.

When referring to code or systems that are difficult to break, software engineers use terms like robust, resilient, fault tolerant, and self-healing. Only by destroying all networks, computers, and exchanges can Bitcoin be permanently stopped. No one will be concerned about Bitcoins if and when this occurs; we will be in far more serious problems.

Bitcoin has staying power because it is spread across the globe and across all computer networks, has a steady increase in use, and has proven code. The general upward trend in Bitcoin transactions is depicted in this chart from Blockchain.info. There are currently around 80,000 transactions per day; when this number reaches 100,000, there will be a significant increase.

Bitcoin is a business-creating currency. MtGox.com is the only alternative currency website that has received as much traffic as the others. With its popularity and price growth, Bitcoin has already eclipsed every

previous virtual or digital money. While the number of e-gold accounts grew to over 5 million, the number of significant stores accepting it never exceeded 100. The number of merchants accepting Bitcoin is steadily growing; one list of merchants accepting Bitcoin can be found here:

http://www.Bitcointrading.com/forum/spendBstores-accepting-Bitcoins/online-stores-accepting-Bitcoins/

Bitcoin transactions are final and cannot be reversed. Unlike credit cards, a buyer who transfers funds to a seller cannot reverse the transaction getting their money back. Once we send Bitcoins, they are now gone. Getting our Bitcoins back, or reversing our spending of them, requires the seller or receiver of the Bitcoins to start a new transaction for sending back the purchase amount.

While we might consider this bad news, it shares this characteristic with cash. When we hand over cash buying something, we cannot

reverse the transaction. The receiver of the cash has to agree to return our money.

Irreversibility turns out to be a positive for buyers, though they may not recognize it. When businesses accept credit cards and payment forms such as

Paypal, they have to add somewhere between 5 percent -15 percent to each price for return allowances and scams. This fee is on top of the 3 percent -5 percent that credit cards, Paypal, etc. charge for their service. Total punishment that most buyers do not consider, but nonetheless pay for: about 8 percent -20 percent .

Cash-like transactions - irreversible ones - can result in reduced prices (can, but not necessarily will).

For sellers, usually businesses accepting Bitcoin, this irreversibility property solves one of the biggest problems with credit cards and Paypal.

For buyers, sometimes the lack of reversing transactions may not be a good thing. Some creative entrepreneurs realized this buyer concern was an opportunity for an escrow service.

Here are a few Bitcoin escrow services:
http://www.btcrow.com/
http://www.thrucoin.com/
http://www.clearcoin.com

Escrow services hold funds until the buyer agrees that the seller delivered. There are also dispute settlement operations included, though not where a seller wants to get involved if at all possible.

Other digital currencies have offered irreversibility, though without the convenience of escrow services. If we send a Western Union payment, it is gone essentially. There are no integrated Western Union escrow services.

Bitcoin's entrenched user base with about

four years of operational proof gives it market dominance. There are other digital currencies, such as Pecunix, PerfectMoney, Liberty Reserve, etc. that have been around longer. However, none of the competitors have the explosive user base, nor do they have the growth trend of Bitcoin:

Globally, there are about 900,000 searches per month on Google for Bitcoin. While the crash in April 2013 slowed search traffic, there are still well over 800,000 unique searches per month, with over 50,000 new mtgox.com accounts added per day at the peak. Mtgox is the biggest Bitcoin exchange and a good indicator of BTC popularity.

There are many other differences between Bitcoin and other digital currencies. Understanding these differences requires going into the intricacies of how Bitcoin operates. We will venture into more of a technical look at Bitcoin in the remaining chapters. When we learn how Bitcoins get created, spent, saved, and circulated it will

give us the keys to creating our own wealth with Bitcoin.

HOW TO USE BITCOINS

“Tell me and I'll forget. Show me and I may remember. Involve me and I will understand.”

Chinese Proverb

This chapter will get our Bitcoin running shoes on and get us into the race. We'll look at where and how to get started with Bitcoin, as well as best practices to follow. We can create several Bitcoin wallets and accounts. We can easily build a separate Bitcoin wallet or key if we make a mistake or want to.

How to Purchase Your First Bitcoin

Mining is one way to gain Bitcoins, but it's not a practical way to receive them right away. We may utilize a few different websites to build up our Bitcoin money system.

When starting out, there are three basic requirements:

A Bitcoin Wallet is a digital wallet that stores bitcoins.

Bitcoins or Bitcoin codes can be stored on a computer, USB drive, SIM card, or iPhone or Android phone. Those coins will be lost if the computer or device is lost. This isn't ideal.

Signing up for a Bitcoin wallet that is hosted on the Internet cloud is one way to keep our Bitcoins safe. We then encrypt the information and back it up to our phone and/or computer, after which we distribute the encrypted data. Only we, or others we trust, will have the key to unlocking our Bitcoin wallet information.

All of this will become evident once we've completed the simple, nearly instantaneous process.

We get a Bitcoin address from a Bitcoin wallet. We use this address to buy and sell Bitcoins. Here's an example of a Bitcoin wallet address created on Coinbase.com, one of several Bitcoin exchanges and wallet providers:

1Lez1wcwPLWNmPtcfGXtSy8F34ZF45fwY

We'll most likely wind up with a lot of wallets and bitcoin addresses. It's best to keep one wallet address for buying Bitcoins and another for selling them.

Here's a look inside this new Bitcoin wallet's account, which currently has no Bitcoins. This is a brand-new Bitcoin wallet that does not have a bank account or is completely functional. With this address, we might receive Bitcoins, but we'll need to establish a bank account to move money in for Bitcoin

purchases.

Here's a partial selection of Bitcoin wallet providers that keep our Bitcoins in the cloud and offer backup:

http://www.Instabit.com

http://www.Blockchain.info

http://www.Coinbase.com

http://www.walletbit.com/

http://instawallet.org/

http://www.dwolla.com

http://www.myBitcoin.com

Another option for receiving a Bitcoin wallet exists, albeit it is much more than that. OkPay.com, which offers a more banking-like service level and direct transfers of

payments to a debit card, is a good place to start. OkPay.com poses a danger because it has more financial obligations than the other Bitcoin wallets mentioned.

Setting up an account with OkPay.com makes it easier to withdraw funds from Bitcoins. Because of the financial risks associated with their extensive transfer options, it is not the safest site to buy a Bitcoin wallet.

There are various Bitcoin wallets that may be installed on our computers without requiring Internet access:

- Electrum

The Satoshi Client is a program that allows you to send and receive bitcoins.

- Armory

- Multibit

These Bitcoin wallets that are stored on a local computer are more difficult to use and secure. Most users will find that a Bitcoin wallet hosted by Blockchain.info (Internet/Cloud Hosted Wallet) is the best option.

A connected account that can be used to fund Bitcoin purchases.

Typically, this is a bank account. To ensure that we possess this account, we must go through verification measures that may include tracking tiny deposits made by the Bitcoin wallet provider. This is how Paypal works. This procedure will take between 24 and 72 hours.

OUR FIRST BITCOINS, ALSO KNOWN AS BITCENTS,

We can purchase from the same location where we created our Bitcoin wallet. We can also buy Bitcoins right here in town. LocalBitcoins.com is a local bitcoin marketplace where you may buy and sell bitcoins with cash or other payment methods of your choice.

You can sell your bitcoins to a local bitcoin dealer or even create your own bitcoin exchange. This is one of the system's most intriguing features. In contrast to the present,

professionally designated exchanges, anyone can become a Bitcoin exchanger and offer their own exchange rates.

People most typically sign up for an account at Mtgox.com, the largest of the exchanges. We may then buy Bitcoins on the Mtgox.com exchange using our Bitcoin wallet address.

We can potentially acquire Bitcoins after funding the Bitcoin wallet provider with funds from our bank account (in this case, Coinbase).

Take a look at this frightening display:

Coinbase's daily limit for buying Bitcoins for their customers, including us, has been reached. This is a common occurrence in the Bitcoin realm. There is greater demand than supply since there are so few Bitcoins in circulation - significantly fewer than the 11 million that have previously been created. Because of the scarcity of Bitcoins, some people are unable to obtain any. The

buying/selling pressure will eventually equalize as the price of Bitcoin rises.

INVESTING IN BITCOINS

We'll have our Bitcoin wallet, Bitcoin address, and some Bitcoins if we were able to obtain Bitcoins for our new wallet. We can now spend Bitcoins in the same way that we can spend conventional currencies. However, finding a store or service that offers what we desire in exchange for Bitcoins is more difficult.

Here's one of the most comprehensive lists of Bitcoin-accepting online stores:

https://www.spendBitcoins.com/places/
(These stores are included in Appendix 4)

Person to person commerce is another option

for using Bitcoins. Any person we discover on craigslist, ebay, or any other auction site may agree to complete the purchase using Bitcoins.

Person to person commerce is another option for using Bitcoins. Any person we discover on craigslist, ebay, or any other auction site may agree to complete the purchase using Bitcoins.

The following is an example of a Bitcoin transaction for purchasing something from a store (http://the-chocolate-tree.bit-trade.co.uk):

Before proceeding to the payment screen, we must fill out the standard information such as our name, phone number, address, and delivery address, as with any other type of payment:

This screen, as well as the Bitcoin address provided, has a 15-minute time limit. We have 15 minutes to transmit money for our

transaction in one of two ways. We can press the "Click Here" button and instantly transmit Bitcoins from our wallet to the chocolate store if we have our Bitcoin wallet client loaded on our computer and it is running the "URI-Compatible" wallet.

Blockchain.info, Armory, Bitcoin Wallet, Multibit Spinner, and a few other smaller players are URI-compatible wallets.

The QR code, which has black and white blocks in the center, is used to scan our phone and pay with a Bitcoin wallet loaded on our phone.

The most frequent and simplest method is to transfer the payment using a long and unique Bitcoin address. To send Bitcoins to the chocolate company by email from our Bitcoin wallet address for this purchase, we must first go to our Bitcoin wallet. Here, we go to our Coinbase.com wallet and navigate to the "sending money" page. It's possible that your wallet will look different than the illustration

below, depending on where you keep it. They all, however, have a send money screen that is nearly identical and works in the same way:

We entered the Bitcoin address of the chocolate company, which they've listed on their buying screen, in the "To:" box. Cut and paste the Bitcoin address, and then set the price of the chocolates to 0.86 btc in Bitcoin. Send it, and chocolates will be on their way!

It's important to know that the merchant or seller may take up to 10 minutes to accept your order. In most cases, the 10-minute wait only applies to computer and phone-based Bitcoin wallets. The merchant must check the network of all Bitcoin holders to ensure that the Bitcoin transaction is legitimate. Bitcoin spends and sends are often recognized instantly by online wallets.

There are a variety of additional ways to spend Bitcoins. Bulk sends, donations, and escrow versions are all possible. Each wallet

and exchange system has its own set of rules for spending Bitcoins.

In forums and other platforms, the format for providing donations or tips is as follows:

@Username $1usd +Bitcointip

Rather of remembering codes, Bitcoin wallets may be used to send tips, make donations, and make bulk payments.

Investing in Bitcoins

We began saving in Bitcoins as soon as we received money and purchased Bitcoins for our wallet. We've turned into our own bank. We will not get interest simply by keeping Bitcoins in our wallets, but the value of our Bitcoins will most likely increase every year on average (versus our national currency).

When we use Bitcoins, we have to adjust our expectations about how we receive, save, and spend money. With our Bitcoin wallet, we

have all the power of a bank. We don't rely on a bank to verify that we have funds in our account. This is handled automatically by Bitcoin. Most Bitcoin advocates believe that we are now fully free of the government's FDIC system and banking system, which is a good thing.

What about taking advantage of the interest that banks, credit unions, and financial organizations provide?

Bitcoin banks are springing up all over the place, offering Bitcoin interest: Based on average account balances, Flexcoin.com offers an unknown number of Bitcoins per month. It can also be used to store Bitcoins.

A reader could be perplexed by the distinction between holding a Bitcoin wallet and using some of the Bitcoin services at this point. Any new technology is bound to cause confusion. For the time being, the most significant tip is that we Bitcoin users will have numerous Bitcoin wallets, with multiple

Bitcoin addresses at different sites for different wallets, and utilize various exchanges (mtgox.com, localBitcoin.com, etc.).

Unlike banks, which force us to register new accounts, Bitcoin allows us to have as many wallet addresses as we like. This preserves our anonymity. Many Bitcoin addresses can be stored in a single Bitcoin wallet. All of data is kept track of for us by the Bitcoin programs we choose to utilize.

IS IT WORTH IT TO INVEST IN BITCOINS?

Purchasing a Bitcoin is an investment. Purchasing Bitcoins is similar to trading foreign currencies. At the same time, we "sell" our national money - USD, Euro, GBP, Yen, and so on - and "purchase" Bitcoins. The biggest difference between investing in foreign currencies and Bitcoin is that the latter has essentially no friction costs.

Buying and selling currencies can come with a hefty price tag. Buying or selling Bitcoins for a national currency is almost entirely free of charge. The Bid and Ask spread, or the gap between what people are willing to pay and

what they are asking for a Bitcoin, is a significant cost.

It can be difficult to open a foreign currency, commodities, stock, or any other type of investing and trading account. We are frequently required to provide proof of income, net worth, years of trading experience, credit score, and other personal information. Investing with bitcoin is a smoother, easier, and simpler process.

Buying and selling Bitcoins provides prospects for profit and loss in foreign currency investing. Early Bitcoin adopters have already seen a thousand-fold increase in their net worth. In less than a year, those who bought Bitcoins at $5/batch in early to mid 2012 are sitting on nearly 20 fold profits.

iCBIT and the IG Group are two new exchanges where more sophisticated investors can buy derivatives (similar to options in the stock and commodities markets). So far, neither of these markets has

seen a lot of trading.

A Bitcoin mutual fund, established in Malta, is also available. Designed primarily for institutions and high-net-worth individuals looking to diversify their Bitcoin portfolios. This is not a suggested buying strategy at the present.

While investing in Bitcoins is unquestionably risky, the rewards can be life-changing.

This book's "How to Trade Bitcoins" part discusses how to get the maximum profit out of your Bitcoin investment. Bitcoins are currently not accepted for stock purchases on national stock exchanges. This is unlikely to change in the near future. Banks and governments that manage commodity, stock, bond, and currency trading exchanges will be wary about granting Bitcoin credibility.

Regardless, Bitcoin has the potential to greatly outperform other investment classes over time, even without access to any

traditional investing markets.

Keeping Bitcoins Safe

It is vital that we safeguard our Bitcoins. It's just as important as safeguarding cash, gold, bank account access, or any other easily convertible asset. Bitcoins can be stolen in the same manner that a password or an online email account can be hacked and exploited.

There are a few options for safeguarding our Bitcoins:

Keep our Bitcoins in an online web wallet at one of several different websites.

The primary risk is that our wallet site will be hacked as long as we keep our login information secure. On 4-3-2013, Instar Wallet was hacked and shut down.

WE SHOULD KEEP OUR BITCOINS ON OUR PC OR PHONE.

Because computers and cell phones can be stolen, this increases the danger of loss. While we may have a password-protected device, passwords can be cracked, and if our device is taken, we lose access to our wallet. We lose access to our Bitcoin wallet on our device whether or not the criminal has access to it.

True Crypt is recommended for encrypting

Bitcoin data such as wallet.dat if we wish to maintain our wallet on our computer or phone.

Keep two wallets on hand if you want to use this security strategy. The first wallet has a little quantity of BTC for daily use, while the second acts as a savings account with more BTC. The BTC wallet for daily use will not be encrypted, making it simple to use. TrueCrypt will be used to protect the larger store of BTCs in the savings wallet. In this way, if our computer or gadget is stolen, we just lose our tiny BTC wallet. 256-bit encryption will be used to protect our large BTC savings account.

All of our Bitcoin files, wallet addresses, passwords, and account ledger can be encrypted. We then save the encrypted files to a safe USB drive, SIM card, or any other storage device like an MP3 player.

We may safely send those Bitcoin files and addresses to anyone for backup purposes

once we've encrypted all of our files with True Crypt (Truecrypt.org) or a comparable application. The password for cracking into the True Crypt files and using the Bitcoins will only be known to us.

A cross between #1 and #2.

Use an online version of a Bitcoin wallet with standard password protection for our daily spending, and then store the majority of our Bitcoins on our computer or mobile phone with the full TrueCrypt encryption and distribution described in #2. This is the best approach. Keeping our Bitcoins in an online wallet, particularly Blockchain (at http://www.Blockchain.info), makes things easier. We can send money anywhere, at any time, as long as we have Internet connectivity on a phone or a computer. On-line, offline, iPhone, Android, and locally stored computer applications all operate well with Blockchain's wallet.

This final way of safeguarding our Bitcoins achieves the best of both worlds by bridging the convenience vs. security divide.

Obtaining Bitcoins

Transferring Bitcoins is nearly identical to spending Bitcoins, as demonstrated in the preceding section.

We generally do not have a time limit for transferring Bitcoins, as in the case of the chocolate purchase. Furthermore, the number of Bitcoins we can transmit is usually unrestricted. Different wallets and exchanges have restrictions on who can send money and how much they can send. For transactions and accounts, some wallets need proof of age. Users must be at least 18 years old to use Coinbase.

Locally held Bitcoin wallets will be unrestricted. The quantity of national money we can convert into Bitcoins is frequently limited by the in-exchanges where we fund

our Bitcoin purchases. Some restrictions apply based on the laws that apply to specific exchanges. Mtgox.com has a daily transaction limit of about $1000. Other exchanges, like Bitcoin-24, do not have transaction or withdrawal restrictions.

There is no limit to the number of Bitcoins we can send from one Bitcoin wallet to another. This is a one-to-one transfer. If we chose to go through an exchange, however, there may be restrictions.

Sending a transfer follows the same steps as the Send process. We just ask the recipient for their Bitcoin address or wallet address, and paste that code into the Send field, as shown below.

It's worth noting that we can utilize an email address as well. Coinbase will send an email to the recipient of this Bitcoin Send informing them that they have Bitcoins waiting for them. They can either furnish Coinbase with a Bitcoin wallet to receive the

money or create a Coinbase account to receive the payment.

Other options include using OkPay.com to send Bitcoins directly to debit cards, or using Dwolla.com, MyBitcoin.com, and others to send Bitcoins to other online payment services. The core stages are the same.

Obtain the Bitcoin wallet address of the recipient.

Open our Bitcoin wallet or account page on any Bitcoin exchange where we have Bitcoins.

Use the Send function and fill in the "To:" field with the recipient's Bitcoin address and/or email address.

Make sure the quantities and addresses are correct. There is usually no way to cancel or recall a transfer once it has been sent.

ACCEPTING BITCOINS IN THE WORKPLACE

Bitpay.com appears to be the most popular online merchant services provider. There are a few more options for receiving Bitcoin payments that are similar to Paypal. Custom code is required for the other Bitcoin merchant tools.

All we have to do now is provide them with our Bitcoin wallet address so that they may transfer payments to us. For each sale, we can also select to create a unique wallet address.

This is how automatic checkouts operate, and it necessitates the use of software that can generate an infinite number of unique Bitcoin wallet addresses.

Bitpay.com asks just that you set up our goods with BTC prices, as well as the standard account tie-ins like business name, tax code number (EIN# for a business or Social Security# for individuals in the United States), and accounts linked to BTC wallets. Then Bitpay takes care of all the clearing and collecting.

The fact that we take Bitcoins on the first page of our store or website indicates that we are prepared to conduct business in the most cutting-edge digital manner.

We can use one of many various merchant solutions with our proud sign displayed. Bitpay is the most popular, however others provide comparable services.

Bitcoin merchant solutions include:

- Okpay.com
- Mtgox.com
- BIPS
- BitUtils
- Paysius
- Walletbit
- Bitpay

This is just a small sample of the ever-growing list of options available to merchants. To sell with Bitcoins, all we have to do is sign up for one of the following accounts (bitpay.com is recommended) and paste the correct Bitcoin code into your website. The site will handle the Bitcoin transactions and loading of the relevant wallet from the purchases automatically.

Using Bitcoins in an Anonymous Manner

For online purchases, there are numerous options for anonymity.

Anonymity of shop/service purchasing transactions - We can produce distinct wallet addresses so that the store doesn't see orders from the same wallet. This type of privacy violates the customer purchase databases that many stores, such as Amazon, Target, and Costco, maintain. There will be an almost limitless number of purchases made from various Bitcoin wallet addresses. It's nearly impossible to monitor consumers because they use various Bitcoin addresses for different purchases.

For each purchase, we can retain this minimal level of anonymity by creating a new Bitcoin address or wallet. For each purchase, several Bitcoin wallet services or clients provide a "New Address" option. This option generates a shadow wallet address that is linked to your

primary wallet and hides the origin of the purchase.

Our original Bitcoin wallet address, account, and email address can all be traced back to our ISP, computer, and, eventually, our identity.

A more complete method is required to prevent any attempt to link a person to a Bitcoin wallet address, service, or email.

Anonymity.com provides the following instructions:

Visit http://www.torproject.corg to download the Tor browser.

Go to TorMail for hidden service and register an email account after Tor validates that you are being routed through the Tor proxy network. This is the first and most significant stumbling hurdle for anyone trying to track Bitcoin addresses: anonymous email addresses.

For each each Bitcoin purchase, use Tor to create a new, anonymous email address.

Use bitinstant.com or any site that accepts cash deposits for Bitcoin email purchases. Another alternative is to buy them in cash anonymously via localBitcoins.com.

Create a name with a DOB using the TorMail email address you just generated, the amount of money you're converting to Bitcoins, and the TorMail email address you just created. It's a good idea to keep these on hand, but it's not required.

Take the cash deposit slip to the service counter where the deposit will be completed. At some spots, there may be cameras to dodge.

After you receive confirmation, the transfer will be executed within an hour.

Using the same processes as before, build a new Bitcoin address and send the Bitcoins to

the new address created with TorMail.

Following these steps will result in a nearly impenetrable anonymity barrier.

With Bitcoin, our anonymity is not guaranteed. Most regularly used services, such as Dwolla, MtGox, Bitcoin-24, Flexcoin, and others, demand us to link our accounts to bank accounts and, in some cases, cell phones. For us to clear our trail, we'll need to put in a lot more effort with this account linking. We purchased a prepaid phone in the $20 range from a tiny vendor so that we could receive our confirmation text and not use it for anything else.

Getting money into and out of a Bitcoin wallet for everyday use will require the use of a bank account that is not linked to the Bitcoin service. We lose our anonymity if we link our financial accounts.

Paypal isn't a popular way to buy Bitcoins, in part because it compromises anonymity.

Another reason to avoid Paypal is that getting Bitcoins using Paypal can take up to seven days. The reversibility of Paypal transactions causes this delay. Other Bitcoin users will assume the transaction is spam or from a dishonest individual if you use Paypal.

Buying Bitcoins with cash, barter, silver, gold, or anything other than bank wires, debit cards, Paypal, or ordinary financial instruments is one of our alternatives for fully keeping Bitcoin privacy throughout - not just per transaction or per store.

How To Make Bitcoins And How To Become A Bitcoin Miner

"No one has the right to consume happiness without contributing to its creation."

Helen Keller is a well-known author.

When Bitcoin first came out, all we had to do was download the Bitcoin program and we were on our way to being Bitcoin miners. We

began developing Bitcoin software, which would display how our computer processor mined Bitcoins while solving the cryptographic code-breaking challenge. Earning Bitcoins on a regular PC was a slow process.

More powerful computers might significantly accelerate the rate at which the puzzles are solved, or hashed as it is known in the Bitcoin language. Bitcoin mining was expected to grow in popularity, according to the software's creators. As the amount of Bitcoins in circulation grows, the software code and mathematics get more difficult to solve - or mine.

THE BITCOIN MINING CONCEPT

Gold and silver are created by mining. Gold and silver have a value based on the costs of locating, licensing, mining ore, culling ore from gold and silver, and minting coins and bars. Bitcoin uses a comparable setup, though it is less expensive and time-consuming. The main distinction is that Bitcoin mining entails deciphering codes or solving cryptographic mathematical riddles.

The most crucial feature of Bitcoin mining is that everyone may participate. There is no central bank, no government treasury, and no

board of directors made up of ostensibly all-knowing individuals deciding how much money to print. If we can build up a mining enterprise, we can all produce Bitcoins.

BTC Miners Use the Following Terms:

Mining entails solving math challenges in order to generate the next block. Miners hash at a set pace dependent on computer power and the Bitcoin hash difficulty over time.

Rig - the entire system for solving Bitcoin algorithms, including the power supply, processing unit, code, and input and output controllers. Dedicated Bitcoin servers are the most common, however any computer or graphics card dedicated to solving BTC block puzzles would suffice. A red-hot fast CPU, GPU (Graphic Processing Unit), ASIC (Application Specific Integrated Circuit), and now dedicated computer boxes known as FPGA are all part of this. When it comes to cracking codes, Field Programmable Gate Arrays are displacing ASICS.

Hash Rate - The rate at which a rig can solve or compute for the Bitcoin network. TH/S stands for Trillion Hashes/Secon, while GH/S stands for Giga Hashes/Secon.

A block is a record that confirms a large number of pending transactions. It then forms part of a block chain, in which each block is linked to previous and subsequent blocks via code segments that have been agreed upon.

The public record of all Bitcoin transactions in chronological order is kept in the form of a block chain. It is used by all Bitcoin users to verify the difference between fraudulent and authentic Bitcoin spends, as well as the balance of Bitcoin addresses and to avoid double spending. Consider the block chain as a Bitcoin ledger with encoded entries.

Bitcoin - These are one-of-a-kind codes "given" to miners for solving issues that allow the next block in the block chain to be created. Bitcoin used to award 50 Bitcoins each solution, but currently only awards

roughly 25. In 2017, this will drop to 12.5 Bitcoins each block. The number of people who die every four years is counted.

Until 2139, the number of bitcoins created every 10 minutes will be cut in half.

What Is Bitcoin Mining?

To learn about mining (while not making any Bitcoins for a long time):

Visit http://www.Bitcoinplus.com/generate for further information.

Select "Generate" from the drop-down menu.

Observe as your computer attempts to crack the Bitcoin codes - but makes little progress over time.

Here are some things to think about if you want to make money mining Bitcoin:

1. Choose the most cost-effective electricity state. CA is one of the highest, and here are a few more on the opposite end of the spectrum:

States with the lowest costs:

- Wyoming
- Idaho
- Utah
- Kentucky

West Virginia is a state in the United States.

States with the highest costs:

Rhode Island is a state in the United States.

- Alaska
- Connecticut

New York is a big city.

- Hawaii

2. Buy a dedicated rig (BTC mining server) or construct one with ATI graphics cards if you want your own rig (BTC mining server). In the low-end GPU server arena, ATI delivers the most energy-efficient GPUs with some of the highest hash rates. Miners are now switching to ASICS and FPGAs.

Here are a few places where you can get the rigs: FPGAmining.com

Ebay.com is an online auction site (sample shown below)

Amazon.com is a good place to look for graphics cards.

Alternatively, we might purchase and assemble our own Bitcoin mining machine.

It's equivalent to constructing our own computer.

We require a power source. The bigger the better. It's best if you can get 500 W or more.

A motherboard with several graphics card slots is required.

A mid-range processor from Intel or AMD is required.

To handle expanding to other graphics cards, we'll require input output cards.

ATI graphics cards are required in multiples. The faster and more memory you have, the better, and the lower the price, the better.

This e-book does not cover how to put the system together or get it to work. http://www.squidoo.com/how-to-build-a-budget-Bitcoin-mining-rig/ is one of the better ones.

Fortunately, creating our own Bitcoin mining setup is not the greatest alternative. Purchasing shares in a mining company is the greatest option, just as it is in the real world. It's similar to buying stock, but without the downside risk and with a lot of upward potential. There are still dangers.

PROBLEMS WITH BITCOIN MINING

Bitcoin mining was not very profitable at first. With BTC/$ exchange rates as low as

With prices ranging from $.06 to $.30, there was no incentive to mine aggressively. Miners began to make big profits mining Bitcoins as the value of the currency soared. Miners might make 50-60 times their investment in the mining gear and electricity at the top ($/BTC of roughly $260). The difficulty of the problems to solve has risen, as has the cost of electricity and the number of miners working on the next block, all while the value of the $/BTC has plummeted.

Because of these variables, an individual miner's chances of profiting from Bitcoin mining are slim unless they invest in expensive equipment. Some of the most expensive Bitcoin mining rigs cost upwards of $10,000.

Most would-be Bitcoin miners would be better off joining a mining pool or buying into a mining club. Individual participants can share a lesser portion of the BTC rewards for solving a single block in the chain by joining mining pools. Otherwise, a single miner could spend a lengthy period mining before finally solving the block at the correct place to collect their 25 BTC. This was not a good investment.

We can either construct or acquire a Bitcoin mining rig, or join a mining group, as previously mentioned. We'd pool our problem-solving abilities with the rest of the team and divide the Bitcoins provided based on the results of the calculations.

One of these mining pools can be seen here: https://deepbit.net/

Scams abound in this sector of Bitcoins, therefore "buyer beware" applies.

Bitcoin's Potential Disasters, Issues, and Challenges

"Man can only find new waters if he is willing to lose sight of the coast."

Gide, Andre

Early adopters - Bitcoin millionaires - have made tremendous profits, while those who purchased the $260+ hype bubble in April of 2013 have lost a lot of money. Even the most ardent supporters are aware that Bitcoin has already experienced multiple outages at the site that handles 80% of all exchanges (mtgox.com), as well as hacks of Bitcoin wallets, price crashes caused by major sellers entering the market, and now government recognition of Bitcoin's success. As this

section illustrates, the future will bring more obstacles.

An Examination Of The Bitcoin System's Failures

Bitcoin is dependant on a network. Computers are the backbone of the network. For the computers to form the network, the Internet, telecom, satellite, and other communication services must be free and functional. Electricity is required for computers and the network. The Bitcoin system can be brought down by any of these legs.

Finally, Bitcoin is based only on the assumption that they are scarce and valuable to keep, spend, and transact with. Unlike gold and silver, Bitcoin has no use and will never have one other than to serve as a token in a computer network.

Despite the fact that services are now striving to create real Bitcoins, there is no practical

way to verify the legitimacy of a Bitcoin address and spending power without computational power. Bitcoin would eventually go extinct if it didn't have access to electricity and computational power. This is a serious problem with Bitcoin that will first hinder widespread use as a means of storing important wealth.

The following are some of the physical versions of Bitcoin that are currently available: Coins that represent Bitcoins are available at https://www.casascius.com. Cards with Bitcoin values are available at http://www.bitbills.com.

The Bitcoin network's and mining's distributed nature is both a huge strength and a problem. All transactions are verified by the network. It also resolves any transactions that are under dispute. There is no one server for miners, spenders, merchants, or the governing body to hack due to the large and rising number of nodes.

The system is far more robust than nearly any other currency system since it lacks a central storehouse of crucial data like CitiBank, Bank of America, or any number of other major banks.

Because Bitcoin has a four-year history, it has also passed the acceptability test. Although major stores have yet to take Bitcoins, smaller businesses have. Bitcoin is accepted by WordPress, Reddit, and a slew of other smaller firms. At least 1,000 businesses have already signed up to use Bitpay's merchant services.

Bitcoin has gained stability now that it has recovered from the $260 to $100 meltdown and is trading around $130 on April 22, 2013. Bitcoin's ally is time. There will be fewer ways to sabotage Bitcoin. Large shops will no longer be able to ignore it as its legitimacy grows and its exchange value becomes more predictable.

Bitcoin isn't yet out of the woods. Dark forces

are pursuing Bitcoin's hide, and they've already struck. We'll look at a few of their primary targets next.

Hackers' and attackers' main targets

Mtgox.com handles over 80% of all Bitcoin purchases and sales. It resembles a stock exchange, featuring price charts, buy/sell orders, and low transaction fees. During the April 2013 crash, Mtgox.com was shut down. They stated that too many individuals were signing up for accounts - approximately 60,000 per day - however this does not appear to be a sufficient explanation for a shutdown that lasted from $260+ in BTC exchange value to around $100 on April 11, 2013.

When Bitfloor.com crashed, it was instantly and permanently shut down. The exchange function, which allows us to swap Bitcoins for dollars, euros, yen, or any other currency or payment system, is vulnerable to currency risk. They have the ability to lose our

Bitcoins and/or national currencies in the blink of an eye. In the near future, this will continue to be an inherent risk.

Here's a rundown of some of the major shutdowns:

Block chain concerns caused Mogo and other Bitcoin exchanges to shut down; there are splits in the block chain due to competing claims to be the genuine chain.

On June 23, 2012, the exchange was shut down due to a similar issue.

The major shutdowns, on the other hand, took place on April 3, 2013 and April 11, 2013. There were no technical issues. Instead of allowing the market to trade freely, Mtgox decided to cool it.

Bitcoin has suffered a number of coding issues in the past, resulting in untraceable Bitcoins on the network. The first, and most serious, occurrence occurred soon after

Bitcoin was created. In August 2010, a transaction generated over 184 million BTC, which was delivered to a few addresses on the network.

They were quickly identified as fake Bitcoins (BTC), the fault in the code that created the fake BTC was fixed, and the network was up and running again within hours.

A split in the block chain occurred on March 13, 2013, as a result of a large number of blocks being created that did not match earlier ones due to a change in software and the size of the blocks created. Depending on whether the software version 0.7 or 0.8 was used, this resulted in two sets of block chains.

The developers working with Bitcoin.org came to an agreement to use the 0.7 version of the software, with all transactions being verified against that block chain. Bitcoin surged back following a 23 percent decline in value as a result of the split.

The lesson, though, is that Bitcoin's basic programming can have issues. We all know that computers are not infallible. This is the problem with Bitcoin.

Scammers, prominent attacks, and bottlenecks

Bitcoin's encryption code is nearly impossible to breach. As a result, hackers are focusing their efforts on using more basic brute force methods to shut down exchanges and steal Bitcoins.

A Distributed-Denial-of-Service (DDoS) attack overloads systems by sending large amounts of bot data visitors. When a major exchange is hacked, the value of Bitcoins falls precipitously. This alone would be enough to entice hackers to take down exchanges in order to clean up the undervalued BTCs. When the exchange reopens, the value of BTC will likely rise, and the hackers will be rewarded—possibly. It's also possible that the hackers are just

trying to bring down the service.

A similar attack brought down Instar Wallet, which was never restored. Other potential attacks include:

Government restrictions try to limit exchange access, classify it as an investment, or claim that it is attempting to be a currency that threatens the government's monopoly. All of these are covered by FinCEN (Financial Crimes Enforcement Network):

This black boot agency, which is stifling our economic freedom, is saying:

Bitcoin users are exempt from FinCEN regulations, but any exchange or wallet service is! MSBs, or money service businesses, are what they're called. This means that any service that charges a fee for transferring, exchanging, storing, or interacting with Bitcoins might become a target for the US Treasury, FBI, IRS, and any other agency that decides to engage.

This is by far the most serious threat to Bitcoin. Our Bitcoin developers, who remain anonymous, foresaw this attack. Their solution was to disseminate the ability to trade Bitcoin.

They included a "dark market." What they truly built in was the ability for free people to transact without anyone else knowing about it, taxing it, or stopping them.

The government will not be able to completely eliminate Bitcoin unless it shuts down the Internet and/or the electricity system. That isn't going to stop them from trying, though.

MAKING MONEY WITH BITCOINS

"Civilization and profit are inextricably linked."

Calvin Coolidge was the president of the United States during the 1920s.

Trading successfully in any market involves extensive research, a good sense of pattern detection, and a thorough understanding of past trends and evaluation methods. Only the fundamentals of trading are covered in this section.

Surprisingly, following fundamental trading rules typically yields the best results. More advanced trading systems, often known as scalping systems, necessitate more work and provide modest earnings, if any at all.

We'll go over the basics of buying and selling Bitcoins, as well as decision criteria for when to purchase and sell (the basis of trading), and Bitcoin trading robots and services.

Bitcoin trading

Anyone who is eager to transact with us can buy or sell Bitcoins. For example, we could use localBitcoin.com to purchase Bitcoins in our area.

Here's an example of a screen:

There are a few noteworthy and important innovations in this market:

As we might assume, online costs are more constant.

Local prices are both higher and lower than those found online.

The gap in pricing between the lowest and highest prices might be as big as 24%. Ignore the erratic $256.20/BTC price. The rest of the world will.

This is essential knowledge for day trading settings. We may buy Bitcoins in amounts of up to $1000 for $122.96. Then we could sell them for $140.81 all day.

Our profit is approximately 8 x $17 = $136. (We will neglect gas costs, and buying fractional amounts of Bitcoins)

We could even acquire Bitcoins online and then resell them locally for a profit. The $153 and $147 sellers appear to prefer this straightforward trading technique.

All we have to do now is follow the instructions outlined in the section under "How to Use Bitcoins." In a nutshell, we

acquire Bitcoins with a custom-created address from a Bitcoin exchange using our Dollar, Coinable, Blockchain, or other wallet. MotoGP, Bitcoin-24, Bitcoin7, and other events are available.

After that, we register for Local Bitcoin. We're in the Bitcoin trading industry now that we've posted our price on their "Sell Bitcoins" section. While this "arbitrage" technique of trading might yield a reasonable return, more aggressive profit hunters can make higher gains.

The ideal way for us to trade Bitcoins is to do it exclusively online. We will purchase BTC using our national currency on a trading exchange, and then sell BTC for either our own or another national currency.

On some exchanges and in other countries, changing currencies is not permitted. Switching currencies on the buy and sell sides of our trade might also add a layer of complexity to our transaction. Unless we

have prior FOREX trading knowledge, it is preferable to remain with one national currency.

For a new account that hasn't been financed yet, here's how a BTC Buy Order with Mogo looks like:

We can enter any amount we have funded under "Amount of BTC to BUY." This is $0.00 for this new account. For most new accounts, it might be as much as $4000 at first. Some exchanges have no constraints, while others have time-based limits.

The "Price per coin in USD" is set at 127 and change by default. As we wait for the order to be executed, it will move up or down. This is a critical factor to consider. The price we pay is influenced by speed, timing, and execution.

There may be a lag after we enter the Amount of BTC to Buy and press the BUY button, but the order is usually executed immediately.

Presto! We're a Bitcoin speculator!

Now, when it comes to the specifics of selling Bitcoins, the fields are nearly identical, with one notable exception. The exchange takes a cut of the transaction in the form of a lower selling price when we sell Bitcoins. Other exchanges function in a different way.

The "spread" refers to the difference between the BTC Buy and Sell prices. The Bid/Ask spread is another name for it. Bid for the price that buyers are willing to pay, and ask for the price that sellers are willing to accept.

The BUY/SELL price in this case is around $0.40 USD. It's not a big spread; it's less than 0.5 percent of the trade.

The good news is that trading Bitcoins is not a time-consuming process. In/Out costs, or round trip costs, are typically less than 1% of the trade and are often free. In/Out costs between bid/ask, commissions, and exchange

fees can be as high as 3% or more for some stock, options, and commodities traders.

Other Bitcoin exchanges work in a similar way to Mogo when it comes to trading.

This isn't automated or computerized trading; it's all manual entry. If we time our trades and directions correctly, manual trading can produce fantastic results. The next section focuses on answering the question of whether to go up or down and when.

Bitcoin Trading Principles in General

Three general trends are emphasized by trading technicians:

The macro or long-term trend is the first and most important consideration. A secular trend is another term for this.

The medium or primary term trend is the

second. The micro, secondary, or short-term trend is the third.

These terms refer to various time periods for various markets, but they are roughly divided as follows:

Macro/Secular is defined as a period of more than 5 years but less than 25 years. From the 1970s to 1980, gold and silver were in a secular or macro bull market.

Primary/medium term trends last a year or more, but not more than four years in most cases. For several years, the broad stock market in the United States, as measured by the S&P500, has been in a secondary bull market.

Micro/secondary trends are those that last less than a year and usually refer to movements that last a few weeks or months. The current stock market decline in the United States is most likely a micro bear or downtrending market. It will confirm that this was a

secondary downtrend rather than a shift into a secular bear market if it reverses and moves higher.

Everything appears straightforward until we have to choose whether to go up or down. To make a perfect trade, we only need to get one decision right. So, what is the long-term or macro trend for Bitcoins in relation to the US dollar?

The other two trends, primary and secondary, are both more difficult to predict and offer a smaller profit margin. We'll go through how to spot such trends shortly, but first, let's look at the millionaire maker, also known as the macro or secular trend.

In a nutshell, the answer is "up." Bitcoin is designed to increase in value on an annual basis.

Bitcoin has various dynamics working in its favor in terms of boosting its exchange value over time:

Almost all national currencies are "printing" Bitcoins in large quantities. As of this writing, there are about 12 million BTCs in circulation, while the Federal Reserve creates about $85 billion in USD each month to buy government securities.

Taking an estimate of the total amount of US cash in circulation and dividing it by BTC yields an astounding number for the potential value of $/BTC.

M2 is a predictor of the currency available for transactions in the United States that is in the middle of the range. M3 is the most general but now defunct form, whereas M1 is more specific to cash on hand. According to Federal Reserve data, M2 is around $10.5 trillion.

If only ten percent of M2 funds were invested in Bitcoin, the total value would be around $1 trillion. This appears to be:

$1,000,000,000,000 divided by 12,000,000

equals $83,333 per Bitcoin.

Yes, it is quite unlikely that ten percent of M2 will end up in BTC. More likely, and as of now, the number of BTC participants entering the market on a monthly basis is increasing. So all we need is 1% of the global M2 value, which includes active traders from Japan, China, Russia, Europe, and Africa. Unless an exchange defaults or a government takes it down forcefully, Bitcoin's value will rise over time.

Bitcoin is a global currency. Almost 70% of searches for the term Bitcoin originate outside of the United States. Asia is the driving force behind much of the Bitcoin trade; Asia is growing at a significantly quicker rate than the United States. Anything that is linked to Asian growth will exceed growth patterns that are centered on a single country.

Increased taxation and seizure around the world will encourage people to use

anonymous currencies that are not governed by a central authority. Many investors in Europe, the United States, and Asia were shocked to learn that Cyprus banks and the government had stolen up to 60% of some bank accounts.

Bitcoin wallets completely circumvent the threat of confiscation. No bank has the authority to shut our Bitcoin accounts or wallets. We have the option of storing our Bitcoins on our laptops, USB devices, or even memorizing them. Bitcoins were created to address just this need: a private, decentralized, potentially anonymous (and so nontaxable) unit of account that could not be confiscated.

Bitcoin is being accepted in an increasing number of stores. The acceptance rate (over 1000 establishments) is difficult to quantify, but there is already a core of stores that convert the virtual worth of BTCs into hard things. BTCs gain credibility and utility as a result of this translation. It will be easier for

retailers to convert to taking BTC once the price has stabilized at $100.

The wild swings in BTC exchange rates made it difficult for retailers to price their items. Furthermore, because there is a limited supply of BTC circulating, there is insufficient demand because the user base is small. The distribution of BTCs can spread when bit pennies are traded, and even microbats and lower denominations are more popular.

Having a wider distribution, there will be more customers with BTCs to spend, resulting in stores being able to meet demand.

Nightclubs in New York City, such as EVR, already take Bitcoins via a phone app. Such trend-setting shops will help Bitcoin gain the necessary popularity to close the gap with traditional, centralized currencies.

No substantial competition can match Bitcoin's established user base, which has

grown over the last four years. Bitcoin's rivals are already raising funds and preparing to take over. They'll struggle to succeed because their benefits are insignificant, and they'll have to establish a new user base. In a subsequent part, we'll talk about Bitcoin's future and potential competitors.

The general trajectory for Bitcoins relative to national currencies will be significantly upwards due to all of the above considerations. This pattern will continue for many years, potentially even 20 years, until there are currency system conflicts.

When comparing BTC to our national currencies, we can then buy the long-term trend and sit tight while our money grows.

The simplest trading system is also one of the most effective for primary and secondary trends.

The chart below (from http://www.Bitcoincharts.com) shows a four-

month price window of closing prices, with exponential moving averages of ten and twenty-five days, and Bollinger bands in the purple or shaded portion:

Extreme moves, in which the short-term trend diverges dramatically from the longer-term trend, are what we're looking for. This indicates the possibility of a bubble or reversal. During the period of April 1-11, an excellent example occurred. The figure indicates where the danger zone occurred using the Bollinger bands and the two exponential moving averages represented by the brown and purple lines (for those with black and white readers, the 10 day is usually always above the 25 day EMA line). All seasoned traders realized there was a sharp drop on the horizon.

There were cautions on the Financial Survival Center (http://www.financialsurvivalcenter.com) and @financialsurvvl twitter feeds to sell out of BTC right away. Jump off the BTC ride into

a national currency when the price breaks out of the upper bounds of Bollinger bands and the short term EMA climbs substantially higher than the long term EMA.

When the BTC price falls deep into the Bollinger bands and the short term EMA line crosses below the long term EMA line, however, it is a good time to buy. Then, as the short term EMA re-crosses above the long term EMA, we can ride it back up.

The fact that there is a set amount of BTC in the system allows us to perform these deals with confidence. It has a high upward trend bias as a result of this. We also know that when a price surge is excessively large, the subsequent decline will be rapid and relatively brief. All of this information comes from our most key prediction: Bitcoin is in a secular bull market relative to all national currencies.

This is all done by hand. Key strategies used in more automated trading include:

Stop-Loss orders are a type of stop-loss order that is (for selling based on a triggered loss level)

Stop Aging (time based selling)

Price to aim for (buying or selling based on reaching a price)

Protection for Purchase Orders (forces over priced orders to below current market rate)

The most important tools are the stop loss and target price. In a market with a high beta, the stop loss should be set as high as 20% or even 25%. A ten percent stop loss, often known as a tight stop loss, can be used in lower beta markets. This corresponds to a $100 investment with a stop loss of around $80.

While there might be a lot more said about various trading strategies, this basic understanding will serve. For selling and buying, we can spot the too highs and too lows. That's all there is to it when it comes to

making money with Bitcoins.

The problem for individuals who want to learn more about trading any currency or market is that there are just too many books and courses accessible. A free newsletter for trading, general investment, alternate income, and alternate currency investing is available from Financial Survival Center.

APPLICATION DEVELOPMENT FOR BITCOIN

Trading robots are becoming increasingly popular in Bitcoin trading. While we may see this as a threat, it has the potential to save Bitcoin. As previously stated, Bitcoin has a significant level of volatility, or Beta. This volatility can be reduced by using trading robots. When there is movement in the market, trading robots, or software, that connects to trading exchanges via Application Development (Programming) Interfaces, will perform frequent tiny trades.

Scalping trades are frequent trades with modest profits (and losses). Because price

changes instantly result in buys or sells against the trend, they help to keep the market stable.

Mtgox.com offers two types of automated trade platform APIs:

HTTP API (Hypertext Transfer Protocol)

API for streaming we sockets

These standards for trading provide access to all important trade information.

A few PHP-based trading bots were available for free, but they were immediately removed from websites. A constantly profitable robot is extremely valuable. The ability to recognize price patterns quickly, execute quickly, and avoid substantial losses is the essence of what makes the robot operate.

Trading software robots have several drawbacks. When they gain too much market share, they have the potential to crash the

market. This is what happened in part during the infamous Black Monday crash in October 1987. With computerized trading platforms, mutual funds sparked excessive selling.

Bitcoin's and Other Alternative Currencies' Future

"Whoever declines to seize a once-in-a-lifetime opportunity forfeits the reward as if he had failed."

There Are Both Possibilities And Risks Ahead

MtGox.com's traffic estimation chart for only U.S. web access looks like this:

Going from 5k to over 25k unique visitors per month (UV) illustrates that both Bitcoin and mtgox have a bright future ahead of them. International online access graphs would show considerably more growth. The bulk of Bitcoin users are from countries other than the United States.

The following are some of the opportunities being pursued and provided to the market:

Bit banknotes, Cassascius, and other physical forms for Bitcoins.

There are apps for Android, iPhone, iPad, Windows, and Linux, among other platforms.

Currency, an Android app for converting currencies, now supports Bitcoins. Bitcoin Wallet for Android and many others allow us to use Bitcoins from our phones almost like a credit or debit card. We can either scan, beam, email, or use a web interface to enter our Bitcoin address and wallet information from a produced QR code (plus other types of withdrawals not yet fully functional).

BitPay, Okay, Mogo, Dollar, and more merchant services are making it easier for retailers to accept and cash out BTC.

Trading platforms are popping up to dethrone Mogo's hegemony. Mogo is not well-liked by

all because it has ceased trading at vital times and frequently has lower prices.

There are a slew of competitors on the horizon as well. So far, Ripple has been the largest and most well-funded.

Ripple was created by a firm called Open Coin Inc. and is based on Bitcoin-like concepts. Ripple, like Bitcoin, is open source and distributed across a network. One of the most significant changes is that there are now around 100 billion ripples in the system, but they are fed into it on a controlled basis.

It also leverages a concept known as social capital to support financial capital. It also contains trust capabilities that let you to choose which networks to use for payments or transfers. The fact that Open Coin Inc. is funded by prominent Wall Street venture capital firms has the Bitcoin community suspicious.

Ripple is emblazoned with the Betamax logo.

Bitcoin is operational, has gotten off to a faster start, belongs entirely to a volunteer community, and is unrelated to Wall Street interests.

Lite coin, Lucre, Open Money, Open Coinage, Voucher-Safe, and a slew of other digital-only competitors are among them.

Embattled competitors that aren't growing but have physical assets like gold and silver to back them up include:

- Peconic

- Goldoni

Bullion Vault is a vault that stores gold and silver coins.

Money that is perfect

Liberty Reserve is a financial institution based in the United States.

- Tecnocash
- C-gold

e-gold was previously accessible.

Global Digital Payments

These gold or silver-backed currencies aren't generally accepted, exchanged, or used. They do have the advantage of being backed by tangible precious metals and convertible into them. Their future, however, is bleak unless they get widespread commercial adoption.

Most importantly, efforts are being made to back Bitcoins with gold or silver. This is a crucial step towards establishing BTC as a usable form of currency. There are other arguments for not going this step, including the fact that it decentralizes the network if gold must be stored. A de facto gold backing, on the other hand, would suggest that the value of a BTC is respected enough to be

exchanged for gold.

Alternative Currencies; Agents for and Against Bitcoins

Governments, banks, the Federal Reserve (and all central banks), Visa, MasterCard, American Express, taxing authorities, and some tech corporations like Apple, Microsoft, Google, and Amazon, as well as the United Nations, all oppose Bitcoin.

Bitcoin has the potential to bring many banks down in the long run. When we can provide our own banking services through choice, no more credit card fees, bank account fees, or restricted interest rate schemes may thrive.

On the plus side, Internet software organizations are enthusiastic supporters of Bitcoin. It has become ingrained in the minds of the younger generation. While their central banks create tremendous inflation, Asia is depending on Bitcoin to keep its hopes of increasing prosperity alive. Bitcoin will be

used by those who do not want their money confiscated (as the Cyprus event demonstrated).

Those who support Bitcoin are more numerous, dedicated, active, and astute than those who oppose it. Bitcoin appears to be on its way to victory.

Getting a Glimpse of Bitcoin Prices

Based on the M2 value in the United States, we've determined that $/BTC might be valued more than $80,000.00.

When all of the world's currencies are factored in, the total rises by a factor of four or more.

What matters more than the cash value of a BTC is what it will be worth in the future. Between now and 2139, when the last Bitcoins are mined, a currency regime shift is possible and likely. What will we be able to purchase with a Bitcoin, or a dollar for that

matter?

As has been the case since 1929, the US dollar will buy less of the important items over time. Over that time, the value of a dollar has dropped by nearly 97 percent. Bitcoins will rise and fall, but not tumble like a waterfall until they are attacked and stopped by governments or banks. Bitcoins will continue to gain market share, pushing national currencies aside.

MARKETS FOR BITCOIN EXPANSION

Bitcoin enterprises have a plethora of options.

Bitcoin consulting for integrating Bitcoin appliances with online and offline retailers, pricing, out-conversion, marketing, and trading.

Creating and distributing Bitcoin trading robots. This is a great opportunity for people with the software talents to tackle the coding as well as the trading expertise to make the robot profitable.

Bitcoin financial transfer agents for

converting from debit cards, credit cards, loans, gold, silver, local currencies, and other currencies, as well as making transfers. Bitcoin is viewed as a threat by the old guard institutions. This creates a window of opportunity for individuals determined to overcome the MSB obstacles.

Bitcoin network monitoring codes are used to notify Bitcoin users when there is unexpected behavior on the network. This would be comparable to how futures in the stock market predict the market's direction before it opens. Bitcoin consumers could be notified when a market-moving event occurs and make informed decisions as a result of this service.

Bitcoin ad network (Bitcoin ad network). One of the most serious problems with Bitcoin is that it is difficult for businesses to use it to purchase business services. The Bitcoin flow from online retailers will be absorbed by an advertising network designed for Bitcoin users. Because Google refuses to convert to

Bitcoin, another option is required.

Bitcoin appears to be a long-term investment. Trading and Bitcoin events are updated on a regular basis at:

http://www.financialsurvivalcenter.com

For frequent trading ideas, risk warnings, and investing strategies concerning Bitcoin and alternative assets, sign up for the newsletter and follow @financialsurvvl on Twitter.

https://bitcointalk.org/ is one of the most active Bitcoin forums.

To a future filled with Bitcoins...and liberty.

Your Bitcoin Instructions,

Daniel Forrester and Mark D. Solomon

Last but not least...

Was this book beneficial to you? Did you despise it? Was it time well spent?

Whether you liked it or didn't, your feedback is valuable to us, the Amazon Marketplace, and, most importantly, your fellow readers.

Please take a minute to leave a review for this book by clicking here. Thanks!

Appendix A: Bitcoin's Major Developments and Timeline David Chau establishes Digi Cash Inc. in 1990. Similar to Bitcoin, transactions were made one-of-a-kind based on cryptographic features.

Digi Cash, Inc. declares bankruptcy in 1998 and is purchased by Cash. Cash is purchased by Info Space in 2002.

Satoshi Nanomotor publishes hundreds of times in the cryptography forum metzdowd.com in 2008. He produces a research paper that explains the concept of Bitcoin.

8/15/2008 - Patent #20100042841 for a Distributed Encryption Key Invention is submitted. 8/18/2008 - The domain bitcoin.org is reserved in Helsinki, Finland.

2009: The Bitcoin network is established with the release of the open source client and the issuance of the first bitcoins.

Mt.Gox, a bitcoin exchange, was founded in 2010.

WikiLeaks, WordPress, Reddit, and small online retailers all accepted Bitcoin in 2011-2012. Bitpay claims to have over 1000 merchants who use their service.

Bitcoins had a significant drop from $30 to $2 in late 2011. In a single month, Coinbase sells over $1 million in Bitcoin.

The Bitcoin transaction log, or block chain, splits in 2013. It will be settled in the end.

The Financial Crimes Enforcement Network

(FinCEN) of the United States Treasury warns Bitcoin exchanges that they are subject to their regulations.

Mt.Gox, the largest Bitcoin exchange, is forced to close due to a price drop from $266 to $1.

$105.00.

APPENDIX B - A COMPREHENSIVE LIST OF BITCOIN SERVICES AND WEBSITES

Bitpay is the most popular merchant processing provider, with the greatest customer base of Bitcoin-accepting businesses.

Please note that this list was current as of April 2013; several of these sites/stores may no longer be operational or take Bitcoin.

https://www.spendbitcoins.com/locations/

ModifiedController.com is a website dedicated to Xbox controllers that have been modified.

Bitcoin Alpaca Products - Alpaca Socks

Design Savvy Science/Academic Based TShirts with Babbletees. At the time of checkout, Bitcoin is accepted.

Heatslingers.com sells 100% genuine Nike Dunk SBs, Air Force 1s, Air Jordans, and apparel. Accepts Bitcoin as payment.

R-Shirt - For geeky pirate RShirts, accepts Bitcoins.

Pirates of Savannah is a website that sells

ebooks and audio books based on a historical adventure novel.

New DVD concerts, movies, select CDs, and other unusual items are available at Video Seconds. International shipping is available.

Happy Tree Cosmetics is a line of natural cosmetics manufactured by hand. For gifts, Bitcoins are accepted on the main business page.

We offer luxury postcards, audio books, and exceptional photographs at ottonormalo (German website).

Private Internet Access VPN Service - Private Internet Access is the most popular VPN tunnel service provider.

We sell embroidered polo shirts, bumper stickers, magnets, and certain computer components at cryptoanarchy.com.

CRON-O-Meter - CRON-O-Meter is a

premium web application that allows you to track your dietary and health information.

Bitmit is the world's largest Bitcoin user-to-user marketplace (auction house and buy now).

FUSA - Dedicated servers, virtual private servers, and colocation services are available from FUSA.

We give instant Virtual Master Cards (bought with Bitcoins) sent to your email at BTCInstant.com.

txt4coins.net is an international SMS service. No registration required, pay-per-use, bulk communications are supported, and a full API is available.

NESTORGAMES - NESTORGAMES is a company that creates and sells physical games.

board games from all around the world in a convenient portable bundle

Shire Silver - Shire Silver makes trading and handling physical precious metals simple.

Stomp Romp Guitars is a pedal-centric guitar store based in New Hampshire, United States. We ship all around the world.

Anonymous Ads is an unusual and transparent ad network that does not collect personal information about its users.

Stateless Sweets - Delicious handcrafted candy prepared with all natural ingredients that is sent to your door as a gift.

BitLasers - We sell Bitcoin-related lasers and accessories. Since 2009, George's Famous Baklava has been baking and sending baklava to customers all over the world.

Coinabul is the world's first gold-to-bitcoin exchange. We buy gold and silver in

exchange for Bitcoin.

Bits For Coins provides high-quality dedicated servers, virtual private servers (VPS), VPNs, and seedboxes. HowToTeachEnglishOnline.com is a website dedicated to teaching English online. Learn how to earn money by teaching English online. The e-book will demonstrate how to:

ClintonCharlie is a designer jeans label that now accepts Bitcoin as payment. MindTag Technical Support - MindTag is a web development firm that specializes in helping businesses flourish online.

Escape To Life is a private detox clinic in Switzerland. 5-day painkiller detox that is quick, gentle, and unobtrusive.

BitcoinAg - Buy silver from BitcoinAg and have it delivered to your door in as little as 5 business days.

Dry cleaning delivery service provided by

Dashing Valet Dry Cleaning.

Guerilla Packs are multi-purpose backpacks.

Mountain Sports in the Eastern U.S.

Private Internet AccessTM - Private Internet AccessTM is the most popular VPN service on the internet.

Minethings.com is a fun online game where you compete against individuals from all around the world.

Volternal Consulting is an IT consulting firm that specializes on employing Free, Libre, and Open Source software.

When this link is active, it labels us as containing malware - Since 2012, Agorist Marketplace has been connecting the free market community.

Real G&G - This site allows you to convert

Bitcoins to any currency you like.
fiveminutecoin - Get free Bitcoins or promote for a low price with the instant advertising option of fiveminutecoin.

Bitcoin Magazine - Bitcoin Magazine is a globally distributed print publication.

All things Bitcoin are covered in this publication.

Vaper's Mark is an electronic cigarette manufacturer that specializes in quality e-liquid and wooden cigarettes.

BitJack21 is a Bitcoin-based blackjack game.
Advertise for Bitcoins at BitcoinAdvertisers.com.
BitcoinNetworks.com is a Bitcoin hosting and cloud computing service.

Bitronic Technologies - Bitcoins are now accepted as a payment mechanism by Bitronic Technologies.

Bitronic Technologies Web Hosting - Bitcoins are accepted as a payment mechanism by Bitronic Technologies.

Get your own webhosting for Bitcoins with XSNL.NET Internet Services.

honestbeef.com - Selling grass-fed beef directly from the farmer in Australia. Pricing that is clear.

MyDogtag.com - Use the online Dogtag Generator to create and order your own unique dog tags! Bitcoins are accepted as payment!

Qiqqa is a free research management application. Bitcoins can be used to acquire Premium membership.

North Outboards specializes in the sale of used boat parts. Bitcoins will be accepted.

SuperSeedbox.co.uk is a seedbox and dedicated server company based in the United

Kingdom.

Mach 1 Web Design is a company that specializes in web design. Make your own website or hire us to do it for you.

"Jewelry is personal," says CISTHENE.

DOTS Investment Strategy - The S&P500 was outperformed by this basic "Sell in May and Go Away" investment strategy.

BitcoinAdSmart - BitcoinAdSmart is the most user-friendly Bitcoin advertising platform.

Schuhwelt.com sells Birkenstock, Meindl, and other well-known German shoe brands.

Seals With Clubs (Bitcoin Poker) - Seals With Clubs (Bitcoin Poker) is a Bitcoin poker game. Ring games and tournaments are available.

FastCash4Bitcoins - We are a direct Bitcoin buyer with quick payouts.

Pacific Bliss Massage - The most delightful massage and integrated healing clinic in Vancouver is Pacific Bliss Massage.

Webhosting, Vserver, Domains, and other services provided by Microtronix.

Ferroh - Buy Diablo 3 gold with Bitcoins!

BeeVPN is a VPN service that focuses on privacy and security.

Bithosting.info - Web hosting starting at 0.5 BTC per month or $5 per BTC per year!

Bam+Boo Baby - Bam+Boo Baby offers a variety of reusable cloth diapers.

Diapers and other environmentally friendly baby products

mumble4bitcoin - Mumble-server slots at an amazing price, just for Bitcoin.

Morgan Digital Engineering Services is a company that specializes in digital engineering. Everyone on the planet is supposed to have at least one "Million-Dollar" idea in their lifetime.

YogiWay.eu is a European yoga eShop that sells yoga mats and other yoga accessories. SurvivalFood.com is a merchant, wholesaler, and consultant of emergency and survival supplies.

Straight Talk is an AT&T Mobility MVNO that offers prepaid cell phone service. Bitcoin Bundles - Bid on Bitcoin bundles and special auctions from time to time.

OZBTC - Australian Bitcoin classified anti-interception - anti-interception stealth phones, privacy protection tools OZBTC - Australian Bitcoin classified anti-interception - anti-interception stealth phones, privacy

protection tools

Pixel Punch Design is a company that specializes in digital and graphic design. Based in the United Kingdom, we take payments from all over the world.

Quantum Kiwi - Web & I.T Solutions - Quantum Kiwi - Web & I.T Solutions - Quantum Kiwi - Web & I.T Solutions We offer CLOUD Web Hosting that is of the highest quality.

Webvox specializes on web design and programming.

Copa Apartments - Rio de Janeiro, Brazil short-term apartment rentals! Washout - Extremely low-cost Minecraft hosting. To try it out, use our one-gigabyte RAM server.

GarageFarm.NET is a modest but mighty internet farm.

Bluetreehost - Bitcoin web hosting from a

well-known firm with a proven track record.

All Things Luxury - Affordable Jewelry You may save up to 75% off retail prices and get free shipping. A large assortment of jewelry is available.

Diplomat Limited is a software and hardware provider for the taxi and private hire industries.

YOKU VPS Servers And Cloud Hosting - Yoku's staff has specialized in VPS Servers and Cloud Server Hosting since 2001.

PhoneSomeone is a wholesaler of used telephone equipment. T-shirts & Blotter Art by TSHIRT LAB - designs inspired by all things amazing!

Btcgriffin-Bitcoin Lottery – Play Bitcoin Lottery

Bitwein - Buy high-quality wine for Bitcoins from palatinate. darkFunction Editor is a 2D

sprite and animation studio for game developers created by darkFunction Software.

Fiber Back Up Canada Inc is an information technology firm. We repair computers and other electronic devices.

Adamant Barbell - Fitness equipment for home and business. Flashlights, batteries, chargers, outdoor gear, and more are available at Lighthound. Directbizware is a Bitcoin-based home and business software. Wine for Bitcoins (Bitwein.de.vu)

VisualCity specializes in Search Engine Optimization (SEO), Web Design, Adwords Management, and Internet Marketing. Cupcakes and Cakes Bakery was the first to sell cupcakes in Bitcoins. BTC-Trader is a Windows-based MtGox trading client. - BTC-Trader is a Windows-based MtGox Bitcoin trading client. When compared to MtGox's web interface, Ico6 - Are you interested in computers? Gaming? Science?

CoinUploads is a Bitcoin file storage and sharing service.

Incredible Greens, a green superfood supplement, is made by Health Kismet.

Bitquestion - Get expert Bitcoin advice: post your burning questions here!
CleverPuffin.com is a web host situated in the United Kingdom that only accepts BitCoin as payment.

Torfl Raffles - Torfl Raffles - Torfl Raffles - Torfl Raffles

House of Smoke is a tobacco shop that sells waterpipes and glass pipes. Tobacco in bulk bags.

SuperSeedbox.co.uk - SuperSeedbox.co.uk provides high-speed seedboxes and servers that are completely anonymous.

FireSteel.com - Military, hikers, hunters, and survivalists use Firesteel fire-making rods.

T-shirts manufactured from waste in Berlin for everyone!

Keystone Pet Place – Keystone Pet Place has been providing a comprehensive range of pet food and supplies since 2007.

Primo Maggio serves authentic Italian cuisine at its finest. The handcrafted antipasti, spaghetti, and desserts are to die for.

Floor and Bram at Fabelhaft Bar make some of Berlin's best cocktails.

Longplayer Vinyl Living Room - Nadim has an incredible collection of rare and hard-to-find vinyl records.

room77 - Or, as some refer to it, the restaurant at the end of capitalism. The best burger ever!

37SOLUTIONS, LLC resells Rackspace Cloud Sites to make cloud computing more

accessible.

BioStim Pty Ltd is a fertilizer and food company based in Australia that now accepts Bitcoins.

With over 18,000 gadgets, Gadgets Direct is Australia's largest gadget site.

All of this comes with free shipping.

Verita Creative is a classy company.

Lighters from the past

Giftsforcoins.com - This is a Bitcoin-only gift shop that sells a variety of items.

Royal Bitcoin is a Bitcoin dice game that requires no sign-up or registration. Offers a rakespace and affiliate commission of 1%.

SimpleVPN is a leading VPN service provider with servers in 19 countries and top-notch customer support.

Lucky Hasher - Bitcoin and Bitcoin Mining Hardware Raffles on the Internet Chromaitccreative - Create interactive ads for as little as 0.0001 BTC per valid response from the read.

Jardim Sonoro (Sound Garden) is a music and sound producer who specializes in music branding and sound effects composition.

Massage in Hong Kong - Massage in Hong Kong Hotel outcall service in Hong Kong. GigaTux is a VPS and web hosting company based in the United Kingdom, the United States, and Germany. Accepts Bitcoins as payment.

HOTServers LLC specializes in the protection and mitigation of DoS and DDoS attacks.

Qroo Power Sports - Qroo Power Sports is all about having a good time while getting some exercise. XMLGold.eu - XMLGold is a digital and electronic currency exchange provider.

Esalen, Deep Tissue, and Reliki Massage by Lexxie for men, women, and couples.

Agriturismo Il Falcone is located in the peaceful Sedena di Lonato countryside (9 km from Desenzano del Garda, Italy).

Kiwi Bird Kollektable Koins - Kiwi Bird sells numismatics, bullion, banknotes, exonumia, and other items.

Grippit UK Ltd specializes in bespoke aluminum displays and is a Signage and Display Board Manufacturer.

Herbal resin extraction with Sprung Bags - Ice Water Extraction Bags. Amagi Metals - Based in Denver, Amagi Metals is a global eCommerce precious and base metal trader.

Personal Online Tutor is an online tuition company that specializes in computer graphics and design.

Maplewood Boot Camps - We provide personal training and group boot camp sessions as well as other fitness services.

• Buy World of Warcraft accounts, Final Fantasy XI accounts, Runescape accounts, and more at MMOclub.

PNTHR.com is a Boston-based web design and app development studio.

finetunes.net - The best mp3s available.

Dazzlepod is a password database that may be used for penetration testing and security audits.

We rent out full-size classic arcade games to

the San Francisco Bay Area at Discfree Arcade Rentals.

Robertson Robots is a company that specializes in electromechanical design, fabrication, programming, and prototype.

Bigpond Movie - Buy Bigpond movies with Bigpond gift certificate codes. Flash animation web site design, internet marketing, and social media marketing services are all available through ChicagoAnimation.com.

2100 South 565 East, Salt Lake City, Firehouse BBQ - Cajun & Creole Restaurant Barbecue Restaurant

We provide gun accessories, paracord, camping, and outdoor/survival items at XPI LLC.

Card25.com is a printing company that accepts Bitcoin as payment in full.

iMAGE46 - One-of-a-Kind Customized Art

River Mountain Manufacturing is a manufacturer of lodge and western furniture and accessories. Namworld offers web hosting, web design, domain registration, and SLL certificates, as well as printing services.

Green Payment Processing is a type of merchant processing that takes place in the United States. VPNme is a VPN service provider dedicated to your anonymity, privacy, and security.

Gifts4Coins

We sell outdoor gear, gun parts, apparel, and survival gear at BTC Bunker. Michad Computer Consulting - Michad Computer Consulting is a one-stop shop for all your computer needs.

Elizabeth Elkin, a famous professional artist with a worldwide reputation, is represented by True Art Gallery.

vandemous - In 2013, and beyond, selling tech support for computer options.

UnixStickers - Customize your Notebook and PC with Linux and Open Source Stickers!

Tumult Inc. - Create amazing HTML5 web content with Tumult Hype.

YourSeedbox - In the CLOUD, we provide dedicated and shared seedboxes with 100Mbit+ connections.

GoGreenSolar.com - GoGreenSolar.com is a green energy value-added supplier.

energy-related goods and services

Website Design, Development, Software Development, and Web Hosting by DR Grove Software LLC.

Atlanta Kick Karate and Kickboxing is Atlanta's largest martial arts school, with 16 years of experience teaching children and adults.

BTC Toys - We are the leading online adult merchandise retailer that only sells to Bitcoin users.

We sell discounted surplus parts used in repair and maintenance at K & S Trading LLC.

The Fairy Wing Repair Shop is a shop that sells enchanted items and oddities. Bitcoins are accepted both online and in person.

OzHobbies is a website where you can buy LED Throwies, robots, and electronic kits.

Crizzle's Buttons specializes in unique and unusual pin-back buttons.

Turismo Supremo - We are a Venezuelan tour operator. We specialize in the sale of

Portable Vaporizers for herbal usage at Vapetropolis.

BitElectronics is a website where you can buy consumer goods with Bitcoin. Free shipping to the European Union!

Maryland's Witch Trials, Legends, and Lore - A book about the state's witch trials.

MonsterMegs Web Hosting - MonsterMegs offers hosting services to individuals, small businesses, and large corporations.

Dynasty Systems - Dynasty Systems is a comprehensive server, storage, and workstation provider.

Pirate Cove specializes in drop-shipping and wholesale sunglasses, purses, shoes, and other accessories. We gladly take Bitcoin.

The Liberty Crier is a news organization that publishes breaking news and analysis.

Open Source Powered is a 3D printer filament and supply firm that also offers fast prototyping in the local area.

Rife Digital Stores - Rife Digital International is the world's largest Rife Machine supplier.

Soccer Shirts Online - Soccer Shirts Online sells a variety of soccer outfits, such as shirts and gear.

7 Buck Tees sells politically incorrect T-shirts for $7 at 7 Buck Tees. We accept Bitcoins as payment.

Scry Anti-Theft For Mac is a piece of anti-theft software. Locate your Mac if it has been stolen. Maintain your anonymity. Keep your information safe.

We resell premium Rackspace Cloud Sites web hosting at 37SOLUTIONS.

at a cost that is comparable to that of a mom and pop establishment.

The Bitcoin Store - This is perhaps the largest store, with over 500,000 electronics items for sale entirely in bitcoin.

Bitherbs.com - We sell natural herbal items that are either related to or belong to Traditional Chinese Herbs.

VPS Servers from VertVPS, with KVM and OpenVZ virtualization, full root access, and locations in North America and France.

LGCards - Get your favorite gaming cards, such as Xbox Live and Playstation, delivered instantly.

Hosterbox - Hosterbox is a Canadian corporation that operates in over 170 countries worldwide.

AltusHost Inc. - Since 2008, AltusHost has been delivering high-quality web hosting

services.

We sell retro gaming controllers, cables, flash carts, and clones at Retrotowers. Bitmit - Electronic Project Parts From 99p - Electronic project parts for a low price.

Spanish Highs Mountain Guides - Spanish Highs Mountain Guides offers a variety of adventure vacations.

Rollingdale Winery - Located in West Kelowna, British Columbia, Rollingdale Winery is a small, family-owned winery.

Digifuzz - Active monitor loudspeakers that are handcrafted and calibrated. Litehosting.org - Litehosting is a VPS service that accepts BTC, LTC, NMC, RUC, and NVC as well as BTC, LTC, NMC, RUC, and NVC.

FeedPies: An Online Rss Feed Reader Script - FeedPies: An Online Rss Feed Reader Script - FeedPies: An Online Rss Feed

Reader Script - Fee

Koch Architecture LLC is a firm that specializes in architecture.

Soft Shop - We have the most up-to-date software at the most affordable pricing!

Podcast Transcription, Typing, Data Entry, Scanning, and Research are all services provided by AJ Processing.

OrangeWebsite.com - Anonymous Web Hosting - OrangeWebsite.com is an ICELAND-based hosting and domain provider.

AKG Guitar Instruction - AKG Guitar Lessons is a company that offers high-quality guitar lessons in the comfort of your own home. BasicBitcoin - This company sells a Bitcoin book.

GoMatkot - Israeli beach paddles or rackets are available from GoMatkot. Who are we at

Grapholab Communication? A bunch of naive people who never say no. The coming together of various abilities.

Tespia Host is a virtual private server (VPS) and server hosting firm. They also provide Cloud Backup options.

Bitcoin Video Casino - Use Bitcoins to play casino games. There is no need to register.

You may begin playing in minutes if you have the necessary equipment.

SovereignLife - SovereignLife is a membership-based service that provides access to a variety of resources.

Ethos Healthy - Ethos offers a one-of-a-kind and interesting range of cutting-edge health goods.

nexus osx86 - computers, gadgets, geek apparel, Bitcoin, and more

puroexpress is a Bitcoin-accepting online cigar business.

CDKey-Hut is the greatest location to get digital codes on the internet. Patcht is an Australian online personalized apparel manufacturer based in Sydney. Pick your favorite design!

Woodworker Krager Custom Wood Products I create heirloom-quality things to your specifications.

Aspire Auctions is an online auction house that specializes in art, antiques, and jewelry. Dedicated servers and high-speed torrent seedboxes are available at SuperSeedbox.co.uk. 100Mb and 1Gb servers and slots are available.

RummageiT is a website that sells new and old electronics, such as computers, laptops,

tablets, monitors, and accessories.

Scribophile - Scribophile is a serious writers' online writing and criticism group.

Winvery Casino is a fully functional online casino and poker room that accepts Bitcoins. puro express is a Bitcoin-accepting online cigar business. GM seeds can be found at www.chiseeds.com. Seeds for free, gardening tips, Moringa, and more! happytreecosmetics is a line of natural, handcrafted cosmetics.

BitMillions.com - Bet with Bitcoin to Get Free Bitcoins Quickly and Easily at the Best Provably Fair Bitcoin Betting Site Lo ASAP Stuff is a company that offers items in Australia.

Bitcoin categorised by OZ BTC

AtmosRX Personal Portable Vaporizers and Accessories from Bits4Atmos!! AtmosRX Herb, Atmos Optimus, AthmosRX Herb,

AthmosRX Herb, AthmosRX Her

Carlen Farm is a small-scale maple syrup, honey, and bee-related product manufacturer.

BitArt - Bitcoin web design, development, and programming! Bitcoin Totaal is a Bitcoin shopping site with a credit card, Ewallet upload, Micro Payments service, and a blog.

buybitcoins.nl is a website dedicated to the sale of bitcoins.

BitArt is a web development and design firm that specializes in advanced web development and design.

Downloads of Bitcoin Hypnosis - This site was created to house our huge collection of self-hypnosis MP3s.

Paint On Screen Europe - Paint On Screen is the premier single-coat paint manufacturer in Europe.

Paint for projection screens.

All Things Luxury - All Things Luxury has a large assortment of affordable jewelry and precious metals.

mytechsolutions.com - Mytech Solutions is a modest web hosting and development company for individuals.

VirtualOptix Networks - VirtualOptix Networks offers a variety of internet and networking services.

SECUSRVR - SECUSRVR aims to shield you from internet filtering by the government.

CBT Nuggets - CBT Nuggets offers high-quality online IT training as well as more in-depth streaming video.

Age of Conquest is a medieval turn-based strategy game similar to Risk.

Kujenga Web Web Design and Internet Marketing - Web Kujenga specializes in online marketing and web design for a variety of enterprises.

Sites to Help You Fill Your Bitcoin Wallet for Free – A blog dedicated to introducing others to the amazing world of Bitcoin!

Play Casino War for Bitcoins at SatoshiBet.

Vacation rentals for 2.0 BTC per night on Homeaway

Win a Million is a betting service where users contribute Bitcoins to a pool. NOrCal Press is a public relations and record label based in Northern California.
ledchristmaslighting.com is a website dedicated to Christmas lighting. Holiday Lights, Halloween Costumes, and other Holiday Decorations are available for purchase on this website.

HFBServers LLC - HFBServers is a game

server hosting company that specialized on DayZ.

Aspire Auctions, Inc. - Fine Art, Antiques, and Jewelry Online Auctioneers and Appraisers.

Tripleclicks is an online marketplace and auction service that is rapidly expanding. There are almost 71,000 goods available.

They sell survival gear, camping goods, and emergency preparedness products at the Survival Camping Store.

Wiser Metals - Buy gold and silver with BitCoin and protect your privacy.

More proxies – Provides proxies for sale.

Since 1993, Crystal Seas Kayaking Tours has been providing premier active vacations in the San Juan Islands.

BannerAdExchange.net - Anyone can join our Banner Ad Exchange Program for free and promote their website.

Picobarn - Picobarn is a website development and hosting company.

Virtual tours - Open360.net We are a company that creates virtual tours and accept Bitcoin as payment.

Squeaky Chairs Band - Website for Athens, Ohio-based rock band. Download songs for free.

Lunea Apartment - Lunea Apartment is the ideal vacation spot in Dubrovnik, Croatia!

The Gold Trader - The Gold Trader is a buyer and seller of gold, diamonds, and silver.

Ontario Injury Lawyers - Canada - Ontario

personal injury lawyers and car accident injury lawyers.

Pedro's Inn - Pedro's offers cheap Beach Access Hotel Rooms for the budget-conscious guest.

Okotto is an online services company that specializes in web hosting, web design, and web development.

WHY ARE BITCOINS THE KEY TO A BETTER WORLD, TRUE LIBERTY, AND A WEALTHY RETIREMENT?

“All wonderful ideas are potentially lethal.”
Oscar Wilde was a writer who lived in the United States

Bitcoin is the gateway to a new world that is much more free, trustworthy, honest, and democratic. Of course, if we only want to utilize Bitcoins for fun, profit, and online transactions, we can do so.

But why stop there? When we use Bitcoins, we enter a system with numerous advantages, including nearly no fees for transactions such as bank wires, complete anonymity or privacy with all financial privileges, and no central bankers or governments taking your Bitcoins. Theft of bank accounts has lately occurred in the banks of Cyprus and Argentina. This, combined with global inflation, has prompted many to seek out a better banking alternative.

Bitcoin takes control of our currencies away from the people, institutions, and even governments who now control them, and instead places it in the hands of all of us. Yes, we now have control over our own money.

Bitcoins can open the locked door of

prosperity by increasing everyone's wealth and prosperity. It contributes to this by acting as a deflationary currency. Due to the limited amount of Bitcoin currency entering the system, Bitcoins automatically increase in value in relation to dollars, euros, and other currencies. This allows us to buy more items with the same amount of Bitcoins year after year.

Tax laws, bank fees, and a variety of confiscation games played by governments, banks, and "authorities" can all be avoided with Bitcoin. While this is a contentious use of Bitcoin, this book would be incomplete without a discussion of Bitcoin's privacy features.

If we move money from our traditional bank account to a friend who has a bank account in another nation, for example, the following rules and costs may apply:

It's possible that we won't be able to send the money. Cuba, Sudan, North Korea, Iran,

Belarus, Syria, Burma, Zimbabwe, and other countries that the US has sanctioned for commerce, including (at one point or another) Cuba, Sudan, North Korea, Iran, Belarus, Syria, Burma, Zimbabwe, and others. (And who knows what will happen tomorrow..)

Outbound fees will often range from $25 to $50, with inbound fees ranging from $25 to $50.

Banks have the option of blocking the wire or returning the funds within 48 hours. In addition, depending on the transfer restrictions, the receiver may be able to withdraw even more money from our account.

Banks frequently convert foreign currencies at a discount, allowing them to benefit on our transfer.

For better or worse, both parties are now known to the bank and the government.

The government has the authority to levy taxes on funds transferred outside of the country. For foreign banks that do not follow US banking standards, this can be as high as 30%. That is infuriating!

Not only do banks charge exorbitant costs for transferring our funds, but they can also take up to 24 hours or even longer in some circumstances. We are paying Ferrari prices for the performance of a moped.

This is just a small example of the financial difficulties that come with utilizing conventional currency, the US dollar, and regular banking.

The following is what a Bitcoin transaction might entail:

There are no bank fees.

There are no costs for buying or selling foreign money.

A tiny service fee of $0.25 (yep, you read that correctly - one quarter) from a site like dwolla.com

It is unnecessary for anyone to know who the buyer or seller is. All parties have complete privacy.

Any country, any person, and any transaction can take place at any moment.

There will be tax consequences based on your reporting rather than a bank reporting on you.

The best part is that our Bitcoin transfer will be almost instantaneous. The recipient can access his or her new hoard of Bitcoins as soon as we press SEND, and continue his cigar factory tour of Cuba with no one knowing. I'm hoping he returns with several Bolivars as a token of our gratitude!

They can then transfer the Bitcoins from his Bitcoin wallet to his overseas bank account via an in/out exchange like mtgox.com or

another exchange.

Bitcoin is deserving of all the attention it is getting because it has so many benefits and only a few minor drawbacks. This tutorial will show any reader how to join the growing number of people who are converting to Bitcoin. Bitcoin has the potential to be the story of the century, with its low-cost money transfers, convenient shopping, safe wealth preservation, and, ultimately, independence.

WHAT YOU CAN DO WITH THIS BOOK

"Holding a cat by the tail teaches you lessons you couldn't learn any other way."

Twain, Mark

With the possible exception of How to Mine for Bitcoins, novice Bitcoin users or individuals who have never heard of Bitcoin will benefit from reading the majority of the chapters in order. If all one wants to do is use Bitcoins, that part may be of little service. After reading this tutorial, any Bitcoin conversation will seem familiar and understandable, with the exception of the

most mathematically complex ones.

If you've purchased a few Bitcoins and conducted some transactions with them but still have concerns about the future, the numerous potential and risks associated with Bitcoin, the only chapter to skip is the one on How to Use Bitcoins. Even Nevertheless, there are likely many Bitcoin users who may benefit from suggestions, strategies, and security measures that they aren't taking but should.

The most useful sections for a seasoned Bitcoin user will most likely be about profitably trading Bitcoins (Profiting with Bitcoins) and Bitcoin predictions for the future (Future of Bitcoin and Alternative Currencies). Though this is by no means a thorough trading tutorial, even a seasoned Bitcoin user may learn some of the science and art of buying and selling Bitcoins, resulting in more regular earnings. Furthermore, the future of Bitcoin, while difficult to predict, presents the best trading

opportunity of all. Either make it long with everything we have, or make it short to the ground. Depending on the timing, both might yield large profits. These problems and their answers will become lot clearer as a result of trading skills.

Being the world's fastest growing financial phenomena implies that things are changing by the minute.

Sign up with: to stay up to date on the latest Bitcoin developments.

www.publisherswebsite.com

In addition to:

www.financialsurvivalcenter.com

Bitcoin trading advice and trend predictions are now part of the Financial Survival Center wealth preservation and profit creating system, using the same trading methodology that recognized the gold and silver bull and

bear markets, the dot-com bubble, real estate bubbles, and biotech chances.

Bitcoin Fundamentals: An Overview

"Do you believe that money is the source of all evil?" Have you ever wondered what the source of all money is?

Ayn Rand was a philosopher who lived in the United States.

The new digital, internet-based form of currency is referred to as Bitcoin. While delving deeper into the basic notion of Bitcoin becomes more complicated, understanding the mathematics underpinning Bitcoin's formation and operations is not required. While the genius behind Bitcoin hums away in the background, we can use, profit from, and generally understand what Bitcoin is and why it is vital in our daily lives.

Best of all, our foray into the Bitcoin realm

has yielded numerous advantages. In terms of money, we can spend less on Bitcoin transactions while seeing our ability to acquire items expand as the value of Bitcoin rises. Of course, value increases are not assured. If we go that road, our privacy will become practically impregnable.

With almost no effort, we can set up an internet business that accepts Bitcoins (such as fees and complications we would encounter trying to accept credit cards).

Even the modest inconvenience of learning new phrases and concepts appears to be a small price to pay for the gold mine of benefits Bitcoin provides. The future treasure Bitcoin promises to bring is still a long way off, but it is crucial. Those prospective benefits will be discussed in the last chapter since they have the potential to be game-changing, and there is still a lot of ground to cover before we get there.

Bitcoin's story is reminiscent of a Tom

Clancy thriller. There are spies on the loose. The cause is being sold off by trusted double agents. Murders, or near-murders, do occur. Innocent men are sentenced to prison. Criminals have amassed vast fortunes. Risk takers have lost larger sums of money. Before fighting each other tooth and nail, geniuses, lunatics, Libertarians, Socialists, government forces, and Anarchist hackers collaborated. (Okay, I'll confess that this is a slight exaggeration, but you get the idea!)

Given that Bitcoin is up against some of the world's most powerful forces, we wouldn't expect anything less. Bitcoin is winning the battle, based on its quick rise from $0.06 to over $200 (and subsequent drop to roughly $100).

The battle between David and Goliath is taking place right in front of our eyes, and the outcome is as expected. The little guys (us) are throwing the powers that be in charge of the money universe and government (PTB - powers that be) off. Hello and welcome to the

fascinating new world of Bitcoin. You will be ecstatic that you did.

came.

WHAT EXACTLY IS A BITCOIN?

Bitcoin is mainly a fictitious piece of software with no inherent value. Gold has intrinsic worth since it can be used to make jewelry, some electronics, make teeth, coat mirrors, and a variety of other things. Silver has even greater intrinsic value for medicinal applications, film, bearing coatings, heat dispersion, and electrical qualities, among other things. Bitcoins, gold, and silver all have one thing in common: they're all digital. They're all quite uncommon.

Bitcoins are similar to the prizes awarded for

correctly solving a math problem. Both the problem and the solution are one-of-a-kind. There will be a limit of around 21 million of these special solution prizes known as "Bitcoins" (the precise amount will be 20999999.97690000).

Bitcoin is referred to as a "crypto-currency" by those who dabble in its sophisticated details, such as programmers and promoters. This made-up phrase refers to the type of arithmetic that determines the rarity of the answers that win Bitcoin rewards.

Bitcoin's nuts and bolts are as follows:

Bitcoin is commonly abbreviated as BTC, with 1 BTC equaling 1 Bitcoin.

We can also work with 0.1 BTC and 0.01 BTC in the same way that we would with dollars.

1 cent is also known as $0.01 USD. It contains tech behind it, similar to Bitcoins, that enables for a very small denomination of

a Bitcoin that looks a little scary:

0.00000001 BTC is a one-thousandth of a billionth of

or one-hundredth of a Bitcoin

In honor of the genius who created the entire coding architecture, this smallest unit of BTC is lovingly known as a "Satoshi." We utilize the same nomenclature from the metric system for discussing Bitcoin denominations, which isn't particularly common.

CentiBitcoin is a bitcent that looks similar to.

MilliBitcoin is either a bitmil or an mbit:.001 BTC or 1mBTC MilliBitcoin is either a bitmil or an mbit MilliBitcoin is either a bitmil or an mbit MilliBitcoin is either a bitmil

For the time being, that's about all we'll require. The microbit or ubit, with.000001 BTC or 1 uBTC, is the smallest and most

fashionable BTC for purists.

Let's hope we all stored up on BTCs before the attack of the 5 zeros if we find ourselves trading in uBTCs shortly!

The Use of Bitcoins

Bitcoins can now be used to make purchases. Because Bitcoins are still too new, not fully understood, and rather risky, no cars, planes, diamonds, or fuzzy dinosaur feet are accessible with them. Many businesses, on the other hand, are warming to Bitcoin; here's how a Bitcoin shopping payment appears on a website called BitcoinIn:

It's worth noting that the prices are already in.001 BTC format. The reason for this is that Bitcoin's value has skyrocketed in comparison to other currencies. Bitcoins are valued in our native currencies. The US dollar, or USD for short, is our national currency if we live in the United States. Euros or € are used by the majority of

Europeans.

Bitcoin was a 6-cent underdog right out of the start, with 1 BTC trading at 0.06 USD. So the identical products that are presently priced at 0.294BTC would have been around.416 BTC in 2009-2010, when Bitcoin was still a baby. We should expect Bitcoin to continue to move deeper into the bitcent, mbit, and even ubit pricing now that it is a rapidly developing online payment alternative.

Keep this excellent example in mind as we discuss why Bitcoin is one of the secrets to personal and financial independence in a later part.

What Is Bitcoin's Origin, and Why Is It Important?

Bitcoin was officially founded in 2009 by a mysterious guy (or group) known only by the Japanese name Satoshi Nakomoto. In the

United States, his name is as popular as John Smith's. To summarize, we have no idea who invented Bitcoin. For a very vital purpose, he kept his true identity hidden.

Bitcoin.org is a domain name that was formed in Helsinki in 2008 from whois.org. According to one version, the system was created by three cryptography-savvy programmers, none of whom were Japanese. Neal King, Vladimir Oksman, and Charles Bry are the men behind one of the key patents #20100042841. All three have filed patents in the fields of encryption and network management.

Fastcompany.com published an excellent essay arguing for the three-man origins of Bitcoin (http://www.fastcompany.com/1785445/Bitcocrypto-currency-mystery-reopened/Bitcoin-crypto-currency-mystery-reopened/Bitcoin-crypto-currency-mystery-reopened/Bitcoin-crypto-currency-mystery-reopened/Bitcoin

All three potential inventors, predictably, strenuously deny any involvement.

According to the Atlantic Wire, Michael Clear, a British programmer, is the brains behind Bitcoin. He rejects it as well. (http://www.theatlanticwire.com/technology/2unmask-Bitcoin-inventors-43535/)

With no one claiming to be Bitcoin's creator, anonymity becomes one of the currency's greatest assets. There is no founder to imprison. There isn't a single Bitcoin bank that can be shut down. Bitcoin is not controlled by a single person, woman, or organization.

Bitcoins are created by a distributed network of people who run Bitcoin miners. Later in this book, we'll talk about Bitcoin mining. The lack of a central processing or regulating place for a currency is a significant issue. Governments, hackers, banks, and common criminals may all assault and frequently destroy that central authority.

Alternative currencies are being pursued by governments. The government was enraged by the popularity of e-gold, a precious metal-backed electronic currency. Dr. Douglas Jackson, the company's founder and CEO, was on the verge of being sentenced to 20 years in prison.

Several concepts for Bitcoin-like currencies have come and gone. Digicash was an early attempt at a central, online, digital money based on code-breaking math that was launched in 1994. Peppercoin was a code-based digital currency.

currency a few years later, but it failed as well.

What these early initiatives lacked was a method of disseminating the currency's ability to generate it. We could all go gold or silver prospecting, just like in the real world. Some of us might even come across some valuable metals. Only a few, very few, of us will strike it rich. That is exactly what Bitcoin

has to provide.

Satoshi Nakomoto's brilliance stems from the fact that he figured out how to make his idea broadly adopted. Satoshi performed a number of deft moves:

Give everyone a piece of the pie by distributing the software that allows more Bitcoins to be created. This is what Bitcoin mining is all about.

There is no central authority or founder in charge of the currency.

Make it work like currency by allowing for irreversible transactions.

Maintain the integrity and transparency of the entire system. Everyone has a copy of the ledger, which contains all of the Bitcoins.

If we act quickly, we may be able to obtain a sizable portion of the Bitcoin pie. Bitcoin multi-millionaires already exist. Many more

people are likely to join those wealthy ranks after reading this book. Bitcoin is still in its infancy.

Why Should I Invest In Bitcoins Or Use Them?

"Nations are ruined not by a single act of violence, but by the gradual and almost imperceptible depreciation of their circulating currency as a result of excessive quantity."

Copernicus, Nicholas

There are three main reasons to invest in Bitcoins:

Money or value is transferred from one Bitcoin user to another (one of the smartest Bitcoins uses)

Here's a table that compares the costs of a

few different ways to send money:

Paypal:

The transfer is free and limited in value as a gift. The limits can range from about $100 to $10,000 in a single transaction, depending on whether an account is verified, how long it has been open, and other factors. Fees are expected to be around 2.5 percent. A $1000 transaction will result in a transfer of $975.

WU (Western Union):

General transfers range from $500 to $3000, while foreign exchange transfers can cost up to $10,000. For cash pick-up in minutes, fees range from $5.00 to $95.00. The medium price range is around $50. WU's $1000 will be received as $950.00.

Banks:

Wires will cost $30 inbound and $30 outbound. It can sometimes cost as much as

$50 each way.

Sending $1000 via bank wire will result in a transfer of around $940.00.

Pecunix, BullionVault, GoldMoney, and others are some of the other digital online currency competitors. They are primarily used for electronic storage of wealth in precious metals, rather than for purchasing things.

Bitcoin:

Dwolla.com, or even a person, can send $1000 in value.

a face-to-face meeting for almost no cost When receiving more than $10, the most a person might pay is about $0.25.

The recipient's account would be credited with $999.75 in BTC value (for today's date, that would be about 9 BTC).

Investing in Bitcoins to protect our wealth.

This is not always a profitable strategy. Bitcoins are extremely volatile. Prices soared into the triple digits before plummeting by half in less than six hours. (10-11 April 2013)

The range of an investment is described by financial analysts using the term "beta." The risk of an investment is measured by beta, which is also known as volatility. Penny stocks, junk bonds, and some commodities are examples of high beta investments. Treasury bonds, German bonds, and other low-beta investments are examples. Bitcoins are classified as having an extremely high beta. Bitcoin's beta will gradually rise to a range of 1.15-1.5. This forecast is based on increased fungibility and continued acceptance.

All markets, including currencies, are subject to variation. Only when markets rise as quickly as Bitcoin did do they set themselves up for an equally rapid fall.

Bitcoin was created with the intention of having a limited supply. Limiting the number of Bitcoins that can be produced is supposed to create a currency that appreciates in value over time.

Here's a graph of BTC's dollar value growth over time:

The values ranged from $.06 to over $200.00, which may be difficult to see. While this demonstrates that trading Bitcoin can yield huge profits, it also demonstrates the risks involved. Storing wealth in Bitcoins at this stage of development is not the best use of Bitcoin, in my opinion.

Working with Bitcoins is probably easier if you read the chapter on "How to Trade Bitcoins." Increasing wealth by simply holding Bitcoins will prove to be more effective in the future. Bitcoins are great for trading right now, but not for storing wealth.

Joining the free currency movement and

gaining access to all of its motivated customers.

Every month, over 600,000 people look up how to join the Bitcoin movement on the internet. For anyone in business, these are potential customers. Currently, only a few stores accept Bitcoins (see the list in the Appendix). Any store that accepts Bitcoins for payment taps into a growing market. It does not imply that a business must only accept Bitcoins. They can still accept credit cards, PayPal, or any other payment method we specify.

Using Bitcoins for commerce and selling products to the growing marketplace adds to the site's excitement, generates back links for better online rankings, and contributes to the growth of the free currency movement.

HOW MUCH DO BITCOINS REALLY COST?

Bitcoins, like all currencies today, are worth what they are exchanged for. There is nothing backing Bitcoins. There is no gold, silver, or value of any kind supporting a bottom level for them.

One possible value for the lowest amount a Bitcoin’s worth is how much computing power and electricity is required to produce one Bitcoin. This value varies based on electricity costs where the mining computers - that do the work for a Bitcoin reward - are located. Electricity costs for mining a Bitcoin

(calculated by PCPer.com here: <http://www.pcper.com/reviews/Graphics-Cards/BitcoinMining-Update-Power-Usage-Costs-Across-United-States>) range.

For a standard Bitcoin mining computer (let's say, an AMD A8-3850 APU), costs range from $.305 per day to as high as $2.50 per day. For more specialized computers, the costs range from $0.55 to $4.05 per day. The number of Bitcoins produced per day depends on several factors.

The lowest level produced is about 0.050 btc and the highest per computer can reach 3.2 btc. Taking the low end on all numbers gives us a value of:

(1btc/0.0050btc/day)*$0.305/day=$61.00 base cost to create or mine a Bitcoin.

The computer's cost is not included here because this level would be for a non-specialized computer.

With a $/BTC price of $50 today, each BTC is costing the least efficient miners

$11 to produce. The most efficient miners are still making a lot of money though. Here's a look at more optimistic mining costs:

Taking the high end production numbers:

1/3.2 BTC/day*($4.05 electricity + $8 computer)=$3.77 base cost for larger scale efficient miners.

Since the $/BTC exchange rate is $100+ (and rising) today, a large scale Bitcoin miner can make money all the way down to a $/BTC exchange rate of about

$4.00

This suggests that rarity is the idea backing Bitcoins. With a BTC production

limit of about 21 million BTC occurring in

2140, there is very gradual growth built into the system.

A clear understanding of what inflation and deflation is important. Bitcoin is considered to have deflationary properties. Not so fast.

While on the surface Bitcoins can only reach a level of 21 million issued, with about 12 million currently around, the real story is significantly different. About 100 million times different.

Remember the smallest unit of a Bitcoin..the Satoshi? It represents 1/100,000,000 of a Bitcoin.

When we total the available units of Bitcoins relative to other currencies, we see that Bitcoins are not nearly as deflationary as they appear.

The real number of Bitcoin units available now is: 1,200,000,000,000,000 or roughly 1 million billion units.

That is not deflationary number. Still, most calculations are based on the 1 BTC unit, and not the smallest denomination. But there is a possibility, as shown above, for Bitcoin to inflate into numbers most of us cannot pronounce. So far that has not happened.

The key thing is understanding what inflation and deflation mean to us in the real world. We can then understand how Bitcoin - or any currency - will behave over time.

Inflation is the amount of money and debt pumped into a system COMPARED TO THE GROWTH OF PRODUCTS AND SERVICES. Notice what has been emphasized. Many analysts focus on the growth of money and debt and forget about the growth of products and services.

The Bitcoin daily growth rate is roughly 0.46 percent while it decays at a much lower 0.025 percent . Decaying refers to Bitcoins being used up or disappearing from the pool of available Bitcoins, somewhat like bad debts

cause money in a system to disappear. At a net growth rate of 0.44 percent per day and slowing down, Bitcoins will generally tend to increase in value compared to the large national currencies such as USD, Euro, or Yen.

Here is a critical comparison:

- Bitcoin growth rate is approximately 1.5-2 percent per year.

- USD monetary growth rate is approximately 5-8 percent based on ShadowStats.com using the more accurate 1990 methodology and including estimates of M3, the broadest measure of money.

- Euro monetary growth rate has varied from a rare low of 1 percent , all the way up to 12 percent , according to the - European Central Bank (ECB) figures. These official figures are almost always understated. The real growth rate of the currency and debt in

circulation could be even higher. Typical growth rates are around 5-8 percent . (source: http://sdw.ecb.europa.eu/reports.do?node=100000141)

By checking with the other side of the world, once can find that the Japanese central bankers have been busy! The JCB (Japans Central Bank) has promised to buy trillions of yen in government bonds. This is almost exactly like printing trillions for eventually pumping into the market place. Prices will rise and potentially explode. The JCB statistics do not show this huge and dangerous monetary growth, with only a 2-5 percent range of growth rate. The truth will be felt on the street for everyone buying real goods and services in the market place.

This brief currency tour shows that Bitcoins will always be more rare than the competing national and central bank currencies. This fact alone brings value to Bitcoins.

History Of Digital Currencies – And How They Lead To Bitcoin

"Failure is a detour, not a dead-end street."

Zig Ziglar

Digicash and eCash, YodelBank, 1mdc, e-bullion, ePassport, Liberty Reserve, Liberty Dollar, e-gold, and many others inhabit the museum of former digital currencies. For most of these currencies, they failed from lack of market acceptance. In other cases, such as with e-gold and Liberty Dollar, the banks and governments take them down for being too successful. A charge of money laundering is slapped on the fledgling currency and then the hammer falls.

Understanding the why, who, and what is behind the powerful drive for creating widely accepted digital currencies is the mission of this chapter. Knowing the reasons other currencies went under is critical. If, for example, we know why Digicash

disappeared, we can spot the same problem with another currency, such as Bitcoin, long before it loses all value.

Great stock market traders and great investors of any assets have in depth knowledge of the history of their investments. This knowledge enables them to spot trends early both up and down. Using this knowledge they can jump on an up trend early, and off when they spot a downtrend. Sounds basic, right?

However, most investors get changes in trends all wrong.

This chapter will help bring anyone up-to-date on the origin of this digital and distributed currency movement. Once the background is understood, one can navigate the future of Bitcoin with greater wisdom, and potentially profit with an accurate assessment of the currency.

DIGITAL GOLD, SILVER, FALSE PROMISES AND DIGITAL SCAMS

Digicash, later bought by eCash, might be termed the parent of the idea behind Bitcoin. David Chalms, a great programmer and cryptographic expert (cryptography is the math discipline focused on constructing codes that are difficult or impossible to break for securing data), invented this digital money. His ideas worked with some of the same notions for establishing online payment “tokens” comparable to Bitcoin.

Digicash went bankrupt in September of 1998, while it had been more of a promise of huge electronic currency, than a reality. With many unsuccessful commercial partnerships from Visa, Microsoft, ABN AMRO, ING and others, Digicash was unable to acquire market momentum.

According to an article about the downfall of Digicash in NEXT! Magazine, January 1999:

“The dogma of Chaum, that DigiCash should aim for the virtual world, was abandoned. It was no use attempting to compete against the credit card giants; they would destroy you if you displeased them. “

David Chalm frequently wrecked market joint venture deals by insisting on too much money and too much secrecy. Digicash and eCash died from mismanagement partly, and competitors that discovered it might eat their lunch.

Lesson #1: A digital or alternative currency

needs to partner early, often, and profitably to survive and develop.

Knowing this historical lesson, anytime we see Bitcoin gaining a large store, business, or website as a user, it is time to load up!

A significant display of this phenomenon occurred between December 2012 and February 2013. Wordpress.org started accepting Bitcoins, and the first Bitcoin bank (Bitcoin-central.com) established operations. Bitcoin grew from under $20 to over $34 in this period.

After Digicash and eCash went away, there were hobbyists that kept working on the concept for a new digital currency.

Something ancient and something new came together first, however, and e-gold reached the market. A Florida doctor and his computer skilled colleague came up with a precious metals backed electronic currency. Unlike Bitcoin or eCash, real gold and silver

backed up the value of e-gold.

e-Gold eventually attracted a user base of over 5 million. While it employed sophisticated cryptography for conducting transactions, it was a centralized currency. This is what ended up killing e-gold.

The U.S. authorities accused e-gold and it's founder of money laundering and other offenses. E-gold was shortly finished. Even though the e-gold system still exists, it is no longer a live e-currency.

Lesson #2: Any alternative currency with a central office, authority, or person will be shut down, arrested, or destroyed by a government and/or bank.

Even though the new alternative money has no resemblance with U.S. currency, the government will accuse the currency manufacturer or promoter of the crime of counterfeit under Title 18 section 471 of the United States Code. Being found guilty

results in a 20-year sentence (approx). (approx.).

Bernard Von NotHaus, originator of the Liberty Dollar, was convicted in 2011 of “making, owning and selling his own currency.” People who bought the Liberty Dollar made a lot of money with his currency. It was silver backed, gorgeous, and beginning to gain acceptance.

Anne M. Tompkins, a prosecuting attorney at the trial in Western North Carolina described the Liberty Dollar as "a unique type of domestic terrorism" trying "to undermine the official currency of our country"(New York Sun, March 2011). (New York Sun, March 2011).

The jailing of a person inventing a currency explains one of the reasons why the originator of Bitcoin is mostly a secret.

Lesson #3: Any person operating a popular

alternative currency will become exposed to legal actions sooner or later.

WHO HATES BITCOIN AND WHY?

As we have seen during the brief history of alternative currencies on the Internet, they typically fail catastrophically. Governments have a monopoly on currency. Banks have a monopoly on keeping, distributing, transferring, making loans, and exchanging currencies.

Governments seek to tax anything and everything. That is what they do best. Taxing transactions and persons needs knowing who spends what and with whom. Any alternative money that enables anonymity such as Bitcoin, presents governments with a hard

problem.

How can they trace Bitcoins and the users to tax them?

If we set-up our Bitcoin accounts in a certain method, and do not bring Bitcoins back into our bank accounts, then governments have a hard time of getting this information. Banks look at Bitcoin as an enemy stealing their wire fees, currency exchange fees, late fees, overdraft fees, and even their bank vault fees. Banks of all kinds, governments around the world, and the centuries old power structure of world banking dynasties and institutions all despise Bitcoin.

While they may dislike Bitcoin, we can also be sure they are participating.

Recently, an individual hammered the value of Bitcoin by selling a big quantity in less than one hour. Mtgox.com, the largest trading exchange for converting and exchanging Bitcoins, shut down for almost 12 hours. This

led Bitcoin value to collapse because nobody could obtain their value in their national currency out of Bitcoin. Virtually like a bank closure, termed a bank holiday, Bitcoin saw a triple digit to almost zero value in less than a day.

Some argued that this was a test run by banking and financial powers, backed with government approval, to see how they could damage this new competitor.

While a banking body or government collapsing Bitcoin is a possibility, a lone individual can crush any currency in similar fashion. George Soros famously helped weaken the British pound in September 16, 1992. Soros sold British pounds aggressively which he had borrowed, and eventually caused the Bank of England to break it's peg to the European Exchange Rate Mechanism. Soros made nearly $1 billion in this trade.

Unfortunately for most Bitcoin users, they all lost money when the huge seller struck.

One of the key aspects of this book will help readers prevent that waterfall collapse in value. Not losing money is the basic rule of investing and trading.

Why Bitcoin Is Different And Better Than Everything \s– Almost.

Since nobody owns Bitcoin, it is hard to shut down. With thousands of people creating Bitcoins in what are called mining operations, there is every incentive for people to get involved. Profit brings involvement. The software operating Bitcoin is open source. Everybody can read the code, comment on it, and verify that it is authentic. Developers gather in numerous places online, but the major hub is:
https://github.com/Bitcoin/Bitcoin

Compared to earlier digital currencies, and traditional currency, Bitcoin offers some great advantages:

Anybody can become engaged in mining

Bitcoins or creating cash. This is almost like being a gold or silver miner. It costs money to get set-up mining Bitcoins, and it grows more difficult every day, like the actual world of mining.

Every node in the Bitcoin network knows about all Bitcoin transactions and manages the ledger of the currency. This transparency keeps the system honest. No one can spend the same Bitcoin twice since each Bitcoin is vetted throughout the system.

Bitcoin availability is limited. Earlier we showed how the central banks throughout the world (i.e. JCB) can produce trillions in national currencies in an instant. Money creation at that level helps national currencies become value less over time. Bitcoins get created at a regular and falling rate. This leads in a currency that is increasingly valued over time.

It is possible to operate entirely anonymously with Bitcoin. This is growing harder and

harder to execute. We explore this in full later in the book. It is a good idea to be set-up as an anonymous user as soon as feasible. The anonymity window will close - and soon. Do not bother about setting up a Bitcoin account related to your identification. We can do that any time. We can also set up as many Bitcoin accounts or identities as we wish.

While some other currencies, particularly e-gold, allowed some privacy, all the records could be tracked back to the e-gold website. Additionally, all the ID's of users stayed on the e-gold servers. They were eventually confiscated during the government raid. Many of the records for apparently private, anonymous parties were provided over willingly by e-gold. Short version: centralized currencies cannot ensure privacy completely. Bitcoin makes a fair attempt at this, by dispersing all transactions without having one clearinghouse or one central database.

Bitcoin has no counter-party risk. It is mathematically established and backed.

Counter-party risk originates from someone or something backing a money or certificate.

The US dollar has the definition in the constitution of:

24.057 kilos or 371 4/16 grains of pure silver as set out by Secretary of the U.S. Treasury Alexander Hamilton in 1792.

Now, the dollar cannot be turned in to a U.S. bank for silver. The counter party for the value of the U.S. dollar is the U.S. government. Our government has broken it's own legislation and will not offer the value specified by the dollar.

Bitcoin has no counter-party backing it. There is no chance of default on what a Bitcoin is worth. Almost all other digital currencies that are backed by gold or silver, have a high counter-party risk.

We can store Bitcoins in our brain, by learning key codes that define our access to

Bitcoins. Other currencies prevent this since there is a central clearing house. Even a perfectly memorized code will not work if the central clearing house or controlling monetary authority rejects access to the account. This denial of account status just happened in Cyprus, and even occurred with the U.S. bank holiday during the depression. As long as the Bitcoins check out as real against the Bitcoin ledger, they are valued for Bitcoin transactions. No one can halt the expenditure of them.

Bitcoin is robust and resilient. Software programmers utilize adjectives such as robust, resilient, fault tolerant, and self-healing when referring to code or systems that are hard to break. Bitcoin can only be halted for good by eliminating all networks, computers, and exchanges. When and if it happens, no one will be thinking about Bitcoins; we'll be in much deeper danger.

Spread out around the globe, across all computer networks, with a continuous up

trend in use, and proven code, Bitcoin has staying strength. This graphic from Blockchain.info shows the general increasing trend of Bitcoin transactions. Nearing 80,000 transactions per day today; when it tops 100,000, there will be a dramatic spike.

Bitcoin generates businesses. None of the other alternative currencies produced sites with as much traffic as MtGox.com. Bitcoin has already eclipsed any other virtual or digital money with its popularity and price growth. While e- gold grew to over 5 million accounts, the number of big merchants accepting it never grew over the 100 mark. Bitcoin already has a continually rising number of retailers that accept Bitcoin; one list of merchants operating with Bitcoin is here:

<http://www.Bitcointrading.com/forum/spend stores- acceptingBitcoins/>

Bitcoin transactions are irreversible. Unlike credit cards, a buyer who transfers payments

to a seller cannot reverse the transaction receiving their money back. Once we send Bitcoins, they are now gone. Getting our Bitcoins back, or reversing our expenditure of them, requires the seller or recipient of the Bitcoins to start a new transaction for giving back the purchase amount.

While we would consider this terrible news, it shares this trait with currency. When we hand over cash for something, we cannot undo the transaction. The receiver of the funds has to agree to refund our money.

Irreversibility turns out to be an advantage for customers, albeit they may not perceive it. When businesses accept credit cards and payment options such as

Paypal, they have to add somewhere between 5 percent -15 percent to each price for return allowances and scams. This cost is on top of the 3 percent -5 percent that credit cards, Paypal, etc. charge for their service. Total punishment that most customers do not

consider, but yet pay for: roughly 8 percent -20 percent .

Cash-like transactions - irreversible ones - can result in reduced pricing (can, but not definitely will) (can, but not necessarily will).

For sellers, mainly businesses accepting Bitcoin, this irreversibility trait removes one of the biggest concerns with credit cards and Paypal.

For buyers, sometimes the lack of reversing deals may not be a positive thing. Some imaginative entrepreneurs understood this buyer fear was an opportunity for an escrow service.

Here are a few Bitcoin escrow services:
http://www.btcrow.com/
http://www.thrucoin.com/
http://www.clearcoin.com

Escrow services keep monies until the buyer confirms that the seller delivered. There are

also dispute settlement processes incorporated, though not where a seller wants to get involved if at all possible.

Other digital currencies have offered irreversibility, however without the ease of escrow services. If we send a Western Union money, it is gone essentially. There are no integrated Western Union escrow services.

Bitcoin's entrenched user base with roughly four years of operational proof gives it market domination. There are other digital currencies, such as Pecunix, PerfectMoney, Liberty Reserve, etc. that have been around longer. However, none of the competitors have the explosive user base, nor do they have the growth tendency of Bitcoin:

Globally, there are roughly 900,000 searches each month on Google for Bitcoin. While the crash in April 2013 decreased search traffic, there are still well over 800,000 unique searches each month, with over 50,000 new mtgox.com accounts added per day at the

peak. Mtgox is the biggest Bitcoin exchange and a good predictor of BTC popularity.

There are numerous other differences between Bitcoin and other digital currencies. Understanding these distinctions requires digging into the technicalities of how Bitcoin operates. We shall dive into more of a technical look at Bitcoin in the next chapters. When we discover how Bitcoins get made, spent, preserved, and circulated it will offer us the keys to creating our own riches with Bitcoin.

How To Use Bitcoins

“Tell me and I'll forget. Show me and I may remember. Involve me and I will understand.”

Chinese Proverb

This chapter will get our Bitcoin running shoes on and get us into the race. We will

cover where and how to be set-up with Bitcoin, and look at best practices when doing so. We can set-up many Bitcoin accounts and wallets. If we make a mistake or want to create a separate Bitcoin wallet or key, we can do that easily.

GETTING YOUR FIRST BITCOIN

Mining is one technique to acquire Bitcoins, but not practical for getting them instantly. There are a few sites we may utilize for building up our Bitcoin money system.

There Are 3 Basic Needs When Starting Out:

- A Bitcoin Wallet

We can hold our Bitcoins or Bitcoin codes on our PC, USB drive, SIM card, or our iPhone or Android phone. If we lose the computer or device somehow, those coins are gone also. Not desirable.

We can secure our Bitcoins by signing up for a Bitcoin wallet that lives in the Internet cloud. We then back-up the information to our phone and/or computer with encryption, and subsequently distribute that encrypted information. Only we will possess the key, or those we trust, for unlocking our Bitcoin wallet information.

This will all become evident when we get through the simple, practically immediate process.

We get a Bitcoin address from a Bitcoin wallet. We use this address to buy and sell Bitcoins. Here's an example of a Bitcoin wallet address created on Coinbase.com, one of several Bitcoin exchanges and wallet providers:

1Lez1wcwPLWNmPtcfGXtSy8F34ZF45fwY

We'll most likely wind up with a lot of wallets and bitcoin addresses. It's best to keep one wallet address for buying Bitcoins and

another for selling them.

Here's a look inside this new Bitcoin wallet's account, which currently has no Bitcoins. This is a brand-new Bitcoin wallet that does not have a bank account or is completely functional. With this address, we might receive Bitcoins, but we'll need to establish a bank account to move money in for Bitcoin purchases.

Here's a partial selection of Bitcoin wallet providers that keep our Bitcoins in the cloud and offer backup:

http://www.Instabit.com

http://www.Blockchain.info

http://www.Coinbase.com

http://www.walletbit.com/

http://instawallet.org/

http://www.dwolla.com

http://www.myBitcoin.com

Another option for receiving a Bitcoin wallet exists, albeit it is much more than that. OkPay.com, which offers a more banking-like service level and direct transfers of payments to a debit card, is a good place to start. OkPay.com poses a danger because it has more financial obligations than the other Bitcoin wallets mentioned.

Setting up an account with OkPay.com makes it easier to withdraw funds from Bitcoins. Because of the financial risks associated with their extensive transfer options, it is not the safest site to buy a Bitcoin wallet.

There are various Bitcoin wallets that may be installed on our computers without requiring Internet access:

- Electrum

The Satoshi Client is a program that allows you to send and receive bitcoins.

- Armory

- Multibit

These Bitcoin wallets that are stored on a local computer are more difficult to use and secure. Most users will find that a Bitcoin wallet hosted by Blockchain.info (Internet/Cloud Hosted Wallet) is the best option.

A connected account that can be used to fund Bitcoin purchases.

Typically, this is a bank account. To ensure that we possess this account, we must go through verification measures that may include tracking tiny deposits made by the Bitcoin wallet provider. This is how Paypal works. This procedure will take between 24 and 72 hours.

Our first Bitcoins, also known as bitcents,

We can purchase from the same location where we created our Bitcoin wallet. We can also buy Bitcoins right here in town. LocalBitcoins.com is a local bitcoin marketplace where you may buy and sell bitcoins with cash or other payment methods of your choice.

You can sell your bitcoins to a local bitcoin dealer or even create your own bitcoin exchange. This is one of the system's most intriguing features. In contrast to the present, professionally designated exchanges, anyone can become a Bitcoin exchanger and offer their own exchange rates.

People most typically sign up for an account at Mtgox.com, the largest of the exchanges. We may then buy Bitcoins on the Mtgox.com exchange using our Bitcoin wallet address.

We can potentially acquire Bitcoins after funding the Bitcoin wallet provider with

funds from our bank account (in this case, Coinbase).

Take a look at this frightening display:

Coinbase's daily limit for buying Bitcoins for their customers, including us, has been reached. This is a common occurrence in the Bitcoin realm. There is greater demand than supply since there are so few Bitcoins in circulation - significantly fewer than the 11 million that have previously been created. Because of the scarcity of Bitcoins, some people are unable to obtain any. The buying/selling pressure will eventually equalize as the price of Bitcoin rises.

INVESTING IN BITCOINS

We'll have our Bitcoin wallet, Bitcoin address, and some Bitcoins if we were able to obtain Bitcoins for our new wallet. We can now spend Bitcoins in the same way that we can spend conventional currencies. However, finding a store or service that offers what we desire in exchange for Bitcoins is more difficult.

Here's one of the most comprehensive lists of Bitcoin-accepting online stores:

https://www.spendBitcoins.com/places/
(These stores are included)

Person to person commerce is another option for using Bitcoins. Any person we discover on craigslist, ebay, or any other auction site may agree to complete the purchase using Bitcoins.

The following is an example of a Bitcoin transaction for purchasing something from a store (http://the-chocolate-tree.bit-trade.co.uk):

Before proceeding to the payment screen, we must fill out the standard information such as our name, phone number, address, and delivery address, as with any other type of payment:

This screen, as well as the Bitcoin address provided, has a 15-minute time limit. We have 15 minutes to transmit money for our transaction in one of two ways. We can press the "Click Here" button and instantly transmit Bitcoins from our wallet to the chocolate store if we have our Bitcoin wallet client loaded on our computer and it is running the

"URI-Compatible" wallet.

Blockchain.info, Armory, Bitcoin Wallet, Multibit Spinner, and a few other smaller players are URI-compatible wallets.

The QR code, which has black and white blocks in the center, is used to scan our phone and pay with a Bitcoin wallet loaded on our phone.

The most frequent and simplest method is to transfer the payment using a long and unique Bitcoin address. To send Bitcoins to the chocolate company by email from our Bitcoin wallet address for this purchase, we must first go to our Bitcoin wallet. Here, we go to our Coinbase.com wallet and navigate to the "sending money" page. It's possible that your wallet will look different than the illustration below, depending on where you keep it. They all, however, have a send money screen that is nearly identical and works in the same way:

We entered the Bitcoin address of the chocolate company, which they've listed on their buying screen, in the "To:" box. Cut and paste the Bitcoin address, and then set the price of the chocolates to 0.86 btc in Bitcoin. Send it, and chocolates will be on their way!

It's important to know that the merchant or seller may take up to 10 minutes to accept your order. In most cases, the 10-minute wait only applies to computer and phone-based Bitcoin wallets. The merchant must check the network of all Bitcoin holders to ensure that the Bitcoin transaction is legitimate. Bitcoin spends and sends are often recognized instantly by online wallets.

There are a variety of additional ways to spend Bitcoins. Bulk sends, donations, and escrow versions are all possible. Each wallet and exchange system has its own set of rules for spending Bitcoins.

In forums and other platforms, the format for providing donations or tips is as follows:

@Username $1usd +Bitcointip

Rather of remembering codes, Bitcoin wallets may be used to send tips, make donations, and make bulk payments.

Investing in Bitcoins

We began saving in Bitcoins as soon as we received money and purchased Bitcoins for our wallet. We've turned into our own bank. We will not get interest simply by keeping Bitcoins in our wallets, but the value of our Bitcoins will most likely increase every year on average (versus our national currency).

When we use Bitcoins, we have to adjust our expectations about how we receive, save, and spend money. With our Bitcoin wallet, we have all the power of a bank. We don't rely on a bank to verify that we have funds in our account. This is handled automatically by Bitcoin. Most Bitcoin advocates believe that we are now fully free of the government's FDIC system and banking system, which is a

good thing.

What about taking advantage of the interest that banks, credit unions, and financial organizations provide?

Bitcoin banks are springing up all over the place, offering Bitcoin interest: Based on average account balances, Flexcoin.com offers an unknown number of Bitcoins per month. It can also be used to store Bitcoins.

A reader could be perplexed by the distinction between holding a Bitcoin wallet and using some of the Bitcoin services at this point. Any new technology is bound to cause confusion. For the time being, the most significant tip is that we Bitcoin users will have numerous Bitcoin wallets, with multiple Bitcoin addresses at different sites for different wallets, and utilize various exchanges (mtgox.com, localBitcoin.com, etc.).

Unlike banks, which force us to register new

accounts, Bitcoin allows us to have as many wallet addresses as we like. This preserves our anonymity. Many Bitcoin addresses can be stored in a single Bitcoin wallet. All of data is kept track of for us by the Bitcoin programs we choose to utilize.

IS IT WORTH IT TO INVEST IN BITCOINS?

Purchasing a Bitcoin is an investment. Purchasing Bitcoins is similar to trading foreign currencies. At the same time, we "sell" our national money - USD, Euro, GBP, Yen, and so on - and "purchase" Bitcoins. The biggest difference between investing in foreign currencies and Bitcoin is that the latter has essentially no friction costs.

Buying and selling currencies can come with a hefty price tag. Buying or selling Bitcoins for a national currency is almost entirely free of charge. The Bid and Ask spread, or the gap between what people are willing to pay and

what they are asking for a Bitcoin, is a significant cost.

It can be difficult to open a foreign currency, commodities, stock, or any other type of investing and trading account. We are frequently required to provide proof of income, net worth, years of trading experience, credit score, and other personal information. Investing with bitcoin is a smoother, easier, and simpler process.

Buying and selling Bitcoins provides prospects for profit and loss in foreign currency investing. Early Bitcoin adopters have already seen a thousand-fold increase in their net worth. Those who purchased Bitcoins at a price of $5/btc in early to mid 2012 are now sitting on nearly 20-fold profits in less than a year.

iCBIT and the IG Group are two new exchanges where more experienced investors can buy derivatives (akin to options in the stock and commodities markets). So far,

neither of these marketplaces has seen a lot of trading.

A Bitcoin mutual fund, established in Malta, is also available. Designed primarily for institutions and high-net-worth individuals looking to diversify their Bitcoin portfolios. This is not a suggested buying strategy at the present.

While investing in Bitcoins is unquestionably risky, the rewards can be life-changing.

This book's "How to Trade Bitcoins" part discusses how to get the maximum profit out of your Bitcoin investment. Bitcoins are currently not accepted for stock purchases on national stock exchanges. This is unlikely to change in the near future. Banks and governments that manage commodity, stock, bond, and currency trading exchanges will be wary about granting Bitcoin credibility.

Regardless, Bitcoin has the potential to greatly outperform other investment classes over time, even without access to any

traditional investing markets.

KEEPING BITCOINS SAFE

It is vital that we safeguard our Bitcoins. It's just as important as safeguarding cash, gold, bank account access, or any other easily convertible asset. Bitcoins can be stolen in the same manner that a password or an online email account can be hacked and exploited.

There are a few options for safeguarding our Bitcoins:

Keep our Bitcoins in an online web wallet at one of several different websites.

The primary risk is that our wallet site will be hacked as long as we keep our login information secure. On 4-3-2013, InstaWallet

was hacked and shut down.

We should keep our Bitcoins on our PC or phone.

Because computers and cell phones can be stolen, this increases the danger of loss. While we may have a password-protected device, passwords can be cracked, and if our device is taken, we lose access to our wallet. We lose access to our Bitcoin wallet on our device whether or not the criminal has access to it.

TrueCrypt is recommended for encrypting Bitcoin files such as wallet.dat if we wish to maintain our wallet on our computer or phone.

Keep two wallets on hand if you want to use this security strategy. The first wallet has a little quantity of BTC for daily use, while the second acts as a savings account with more BTC. The BTC wallet for daily use will not be encrypted, making it simple to use.

TrueCrypt will be used to protect the larger store of BTCs in the savings wallet. In this way, if our computer or gadget is stolen, we just lose our tiny BTC wallet. 256-bit encryption will be used to protect our large BTC savings account.

All of our Bitcoin files, wallet addresses, passwords, and account ledger can be encrypted. We then save the encrypted files to a safe USB drive, SIM card, or any other storage device like an MP3 player.

We may safely send those Bitcoin files and addresses to anyone for backup purposes once we've encrypted all of our files with TrueCrypt (Truecrypt.org) or a comparable application. Only we will be able to crack the TrueCrypt files and use the Bitcoins since we will know the password.

A cross between #1 and #2.

Use an online version of a Bitcoin wallet with

standard password protection for our daily spending, and then store the majority of our Bitcoins on our computer or mobile phone with the full TrueCrypt encryption and distribution described in #2. This is the best approach. Keeping our Bitcoins in an online wallet, particularly Blockchain (at http://www.Blockchain.info), makes things easier. We can send money anywhere, at any time, as long as we have Internet connectivity on a phone or a computer. On-line, offline, iPhone, Android, and locally stored computer applications all operate well with Blockchain's wallet.

This final way of safeguarding our Bitcoins achieves the best of both worlds by bridging the convenience vs. security divide.

OBTAINING BITCOINS

Transferring Bitcoins is nearly identical to spending Bitcoins, as demonstrated in the preceding section.

We generally do not have a time limit for transferring Bitcoins, as in the case of the chocolate purchase. Furthermore, the number of Bitcoins we can transmit is usually unrestricted. Different wallets and exchanges have restrictions on who can send money and how much they can send. For transactions and accounts, some wallets need proof of age. Users must be at least 18 years old to use Coinbase.

Locally held Bitcoin wallets will be

unrestricted. The quantity of national money we can convert into Bitcoins is frequently limited by the in-exchanges where we fund our Bitcoin purchases. Some restrictions apply based on the laws that apply to specific exchanges. Mtgox.com has a daily transaction limit of about $1000. Other exchanges, like Bitcoin-24, do not have transaction or withdrawal restrictions.

There is no limit to the number of Bitcoins we can send from one Bitcoin wallet to another. This is a one-to-one transfer. If we chose to go through an exchange, however, there may be restrictions.

Sending a transfer follows the same steps as the Send process. We just ask the recipient for their Bitcoin address or wallet address, and paste that code into the Send field, as shown below.

It's worth noting that we can utilize an email address as well. Coinbase will send an email to the recipient of this Bitcoin Send

informing them that they have Bitcoins waiting for them. They can either furnish Coinbase with a Bitcoin wallet to receive the money or create a Coinbase account to receive the payment.

Other options include using OkPay.com to send Bitcoins straight to debit cards, or using Dwolla.com, MyBitcoin.com, and others to send Bitcoins to other online payment systems. The core stages are the same.

Obtain the Bitcoin wallet address of the recipient.

Open our Bitcoin wallet or account page on any Bitcoin exchange where we have Bitcoins.

Use the Send function and fill in the "To:" field with the recipient's Bitcoin address and/or email address.

Make sure the quantities and addresses are correct. There is usually no way to cancel or

recall a transfer once it has been sent.

Accepting Bitcoins in the Workplace

Bitpay.com appears to be the most popular online merchant services provider. There are a few more techniques for taking Bitcoin payments that are similar to PayPal. Custom code is required for the other Bitcoin merchant tools.

All we have to do now is provide them with our Bitcoin wallet address so that they may transfer payments to us. For each sale, we can also select to create a unique wallet address.

This is how automatic checkouts operate, and it necessitates the use of software that can generate an infinite number of unique Bitcoin wallet addresses.

Bitpay.com asks just that you set up our goods with BTC prices, as well as the standard account tie-ins like business name, tax code number (EIN# for a business or Social Security# for individuals in the United

States), and accounts linked to BTC wallets. Then Bitpay takes care of all the clearing and collecting.

The fact that we take Bitcoins on the first page of our store or website indicates that we are prepared to conduct business in the most cutting-edge digital manner.

We can use one of many various merchant solutions with our proud sign displayed. Although BitPay is the most popular, others provide comparable services.

Okpay.com Mtgox.com BIPS BitUtils Paysius Walletbit Bitpay Bitpay

This is just a small sample of the ever-growing list of options available to merchants. To sell with Bitcoins, all we have to do is sign up for one of the following accounts (bitpay.com is recommended) and paste the correct Bitcoin code into your website. The site will handle the Bitcoin transactions and loading of the relevant wallet from the purchases automatically.

Using Bitcoins in an Anonymous Manner

For online purchases, there are numerous options for anonymity.

Anonymity of shop/service purchasing transactions - We can produce distinct wallet addresses so that the store doesn't see orders from the same wallet. This type of privacy violates the customer purchase databases that many stores, such as Amazon, Target, and Costco, maintain. There will be an almost limitless number of purchases made from various Bitcoin wallet addresses. It's nearly impossible to monitor consumers because they use various Bitcoin addresses for different purchases.

For each purchase, we can retain this minimal level of anonymity by creating a new Bitcoin address or wallet. For each purchase, several Bitcoin wallet services or clients provide a "New Address" option. This option generates a shadow wallet address that is linked to your primary wallet and hides the origin of the purchase.

Our original Bitcoin wallet address, account, and email address can all be traced back to our ISP, computer, and, eventually, our identity.

A more complete method is required to prevent any attempt to link a person to a Bitcoin wallet address, service, or email.

Anonymity.com provides the following instructions:

Visit http://www.torproject.corg to download the Tor browser.

Go to Tornal for hidden service and register an email account after Tor validates that you are being routed through the Tor proxy network. This is the first and most significant stumbling hurdle for anyone trying to track Bitcoin addresses: anonymous email addresses.

For each each Bitcoin purchase, use Tor to create a new, anonymous email address.

Use bitinstant.com or any site that accepts cash deposits for Bitcoin email purchases. Another alternative is to buy them in cash anonymously via localBitcoins.com.

Create a name with a DOB using the Tornal email address you just generated, the amount of money you're converting to Bitcoins, and the Tornal email address you just created. It's a good idea to keep these on hand, but it's not required.

Take the cash deposit slip to the service counter where the deposit will be completed. At some spots, there may be cameras to dodge.

After you receive confirmation, the transfer will be executed within an hour. Using the same processes as before, build a new Bitcoin address and send the Bitcoins to the new address created with Tornal.

Following these steps will result in a nearly impenetrable anonymity barrier.

With Bitcoin, our anonymity is not guaranteed. Most regularly used services, such as Dollar, Mogo, Bitcoin-24, Flex coin, and others, demand us to link our accounts to bank accounts and, in some cases, cell phones. For us to clear our trail, we'll need to put in a lot more effort with this account linking. We purchased a prepaid phone in the $20 range from a tiny vendor so that we could receive our confirmation text and not use it for anything else.

Getting money into and out of a Bitcoin wallet for everyday use will require the use of a bank account that is not linked to the Bitcoin service. We lose our anonymity if we link our financial accounts.

PayPal isn't a popular way to buy Bitcoins, in part because it compromises anonymity. Another reason to avoid PayPal is because receiving Bitcoins using PayPal can take up to seven days. The reversibility of PayPal transactions causes this delay. Other Bitcoin users will assume the transaction is spam or

from a dishonest individual if you utilize PayPal.

Buying Bitcoins with cash, barter, silver, gold, or anything other than bank wires, debit cards, PayPal, or ordinary financial instruments is one of our alternatives for fully keeping Bitcoin privacy throughout - not just per transaction or per store.

How To Make Bitcoins And How To Become A Bitcoin Miner

“No one has the right to consume happiness without contributing to its creation.”

Helen Keller is a well-known author.

When Bitcoin first came out, all we had to do was download the Bitcoin program and we were on our way to being Bitcoin miners. We began developing Bitcoin software, which would display how our computer processor mined Bitcoins while solving the cryptographic code-breaking challenge.

Earning Bitcoins on a regular PC was a slow process.

More powerful computers might significantly accelerate the rate at which the puzzles are solved, or hashed as it is known in the Bitcoin language. Bitcoin mining was expected to grow in popularity, according to the software's creators. As the amount of Bitcoins in circulation grows, the software code and mathematics get more difficult to solve - or mine.

THE BITCOIN MINING CONCEPT

Gold and silver are created by mining. Gold and silver have a value based on the costs of locating, licensing, mining ore, culling ore from gold and silver, and minting coins and bars. Bitcoin uses a comparable setup, though it is less expensive and time-consuming. The main distinction is that Bitcoin mining entails deciphering codes or solving cryptographic mathematical riddles.

The most crucial feature of Bitcoin mining is that everyone may participate. There is no central bank, no government treasury, and no board of directors made up of ostensibly all-

knowing individuals deciding how much money to print. If we can build up a mining enterprise, we can all produce Bitcoins.

BTC Miners Use the Following Terms:

Mining entails solving math challenges in order to generate the next block. Miners hash at a set pace dependent on computer power and the Bitcoin hash difficulty over time.

Rig - the entire system for solving Bitcoin algorithms, including the power supply, processing unit, code, and input and output controllers. Dedicated Bitcoin servers are the most common, however any computer or graphics card dedicated to solving BTC block puzzles would suffice. A red-hot fast CPU, GPU (Graphic Processing Unit), ASIC (Application Specific Integrated Circuit), and now dedicated computer boxes known as FPGA are all part of this. When it comes to cracking codes, Field Programmable Gate Arrays are displacing ASICS.

Hash Rate - The rate at which a rig can solve or compute for the Bitcoin network. TH/S stands for Trillion Hashes/Secon, while GH/S stands for Giga Hashes/Secon.

A block is a record that confirms a large number of pending transactions. It then forms part of a block chain, in which each block is linked to previous and subsequent blocks via code segments that have been agreed upon.

The public record of all Bitcoin transactions in chronological order is kept in the form of a block chain. It is used by all Bitcoin users to verify the difference between fraudulent and authentic Bitcoin spends, as well as the balance of Bitcoin addresses and to avoid double spending. Consider the block chain as a Bitcoin ledger with encoded entries.

Bitcoin - These are one-of-a-kind codes "given" to miners for solving issues that allow the next block in the block chain to be created. Bitcoin used to award 50 Bitcoins each solution, but currently only awards

roughly 25. In 2017, this will drop to 12.5 Bitcoins each block. The number of people who die every four years is counted.

Until 2139, the number of bitcoins created every 10 minutes will be cut in half.

What Is Bitcoin Mining?

To learn about mining (while not making any Bitcoins for a long time):

Visit http://www.Bitcoinplus.com/generate for further information.

Select "Generate" from the drop-down menu.

Observe as your computer attempts to crack the Bitcoin codes - but makes little progress over time.

Here are some things to think about if you want to make money mining Bitcoin:

1. Choose the most cost-effective electricity state. CA is one of the highest, and here are a few more on the opposite end of the spectrum:

States with the lowest costs:

- Wyoming
- Idaho
- Utah
- Kentucky

West Virginia is a state in the United States.

States with the highest costs:

Rhode Island is a state in the United States.

- Alaska

- Connecticut

New York is a big city.

- Hawaii

2. Buy a dedicated rig (BTC mining server) or construct one with ATI graphics cards if you want your own rig (BTC mining server). In the low-end GPU server arena, ATI delivers the most energy-efficient GPUs with some of the highest hash rates. Miners are now switching to ASICS and FPGAs.

Here are a few places where you can get the rigs: FPGAmining.com

Ebay.com is an online auction site (sample shown below)

Amazon.com is a good place to look for graphics cards.

Alternatively, we might purchase and assemble our own Bitcoin mining machine. It's equivalent to constructing our own computer.

We require a power source. The bigger the better. It's best if you can get 500 W or more.

A motherboard with several graphics card slots is required.

A mid-range processor from Intel or AMD is required.

To handle expanding to other graphics cards, we'll require input output cards.

ATI graphics cards are required in multiples. The faster and more memory you have, the better, and the lower the price, the better.

This e-book does not cover how to put the system together or get it to work. http://www.squidoo.com/how-to-build-a-budget-Bitcoin-mining-rig/ is one of the

better ones.

Fortunately, creating our own Bitcoin mining setup is not the greatest alternative. Purchasing shares in a mining company is the greatest option, just as it is in the real world. It's similar to buying stock, but without the downside risk and with a lot of upward potential. There are still dangers.

PROBLEMS WITH BITCOIN MINING

Bitcoin mining was not very profitable at first. With BTC/$ exchange rates as low as

With prices ranging from $.06 to $.30, there was no incentive to mine aggressively. Miners began to make big profits mining Bitcoins as the value of the currency soared. Miners might make 50-60 times their investment in the mining gear and electricity at the top ($/BTC of roughly $260). The difficulty of the problems to solve has risen, as has the cost of electricity and the number of miners working on the next block, all while the value of the $/BTC has plummeted.

Because of these variables, an individual miner's chances of profiting from Bitcoin mining are slim unless they invest in expensive equipment. Some of the most expensive Bitcoin mining rigs cost upwards of $10,000.

Most would-be Bitcoin miners would be better off joining a mining pool or buying into a mining club. Individual participants can share a lesser portion of the BTC rewards for solving a single block in the chain by joining mining pools. Otherwise, a single miner could spend a lengthy period mining before finally solving the block at the correct place to collect their 25 BTC. This was not a good investment.

We can either construct or acquire a Bitcoin mining rig, or join a mining group, as previously mentioned. We'd pool our problem-solving abilities with the rest of the team and divide the Bitcoins provided based on the results of the calculations.

One of these mining pools can be seen here: https://deepbit.net/

Scams abound in this sector of Bitcoins, therefore "buyer beware" applies.

Bitcoin's Potential Disasters, Issues, and Challenges

"Man can only find new waters if he is willing to lose sight of the coast."

Gide, Andre

Early adopters - Bitcoin millionaires - have made tremendous profits, while those who purchased the $260+ hype bubble in April of 2013 have lost a lot of money. Even the most ardent supporters are aware that Bitcoin has already experienced multiple outages at the site that handles 80% of all exchanges (mtgox.com), as well as hacks of Bitcoin wallets, price crashes caused by major sellers entering the market, and now government

recognition of Bitcoin's success. As this section illustrates, the future will bring more obstacles.

An Examination Of The Bitcoin System's Failures

Bitcoin is dependant on a network. Computers are the backbone of the network. For the computers to form the network, the Internet, telecom, satellite, and other communication services must be free and functional. Electricity is required for computers and the network. The Bitcoin system can be brought down by any of these legs.

Finally, Bitcoin is based only on the assumption that they are scarce and valuable to keep, spend, and transact with. Unlike gold and silver, Bitcoin has no use and will never have one other than to serve as a token in a computer network.

Despite the fact that services are now striving

to create real Bitcoins, there is no practical way to verify the legitimacy of a Bitcoin address and spending power without computational power. Bitcoin would eventually go extinct if it didn't have access to electricity and computational power. This is a serious problem with Bitcoin that will first hinder widespread use as a means of storing important wealth.

The following are some of the physical versions of Bitcoin that are currently available: Coins that represent Bitcoins are available at https://www.casascius.com. Cards with Bitcoin values are available at http://www.bitbills.com.

The Bitcoin network's and mining's distributed nature is both a huge strength and a problem. All transactions are verified by the network. It also resolves any transactions that are under dispute. There is no one server for miners, spenders, merchants, or the governing body to hack due to the large and rising number of nodes. The system is far more

robust than nearly any other currency system since it lacks a central storehouse of crucial data like CitiBank, Bank of America, or any number of other major banks.

Because Bitcoin has a four-year history, it has also passed the acceptability test. Although major stores have yet to take Bitcoins, smaller businesses have. WordPress, Reddit, and a slew of other smaller firms accept Bitcoin. At least 1,000 merchants are now using Bit pay for merchant services.

Bitcoin has gained stability now that it has recovered from the $260 to $100 meltdown and is trading around $130 on April 22, 2013. Bitcoin's ally is time. There will be fewer ways to sabotage Bitcoin. Large shops will no longer be able to ignore it as its legitimacy grows and its exchange value becomes more predictable.

Bitcoin isn't yet out of the woods. Dark forces are pursuing Bitcoin's hide, and they've already struck. We'll look at a few of their

primary targets next.

Hackers' and attackers' main targets

Mtgox.com handles over 80% of all Bitcoin purchases and sales. It resembles a stock exchange, featuring price charts, buy/sell orders, and low transaction fees. During the April 2013 crash, Mtgox.com was shut down. They stated that too many individuals were signing up for accounts - approximately 60,000 per day - however this does not appear to be a sufficient explanation for a shutdown that lasted from $260+ in BTC exchange value to around $100 on April 11, 2013.

When Bitfloor.com crashed, it was instantly and permanently shut down. The exchange function, which allows us to swap Bitcoins for dollars, euros, yen, or any other currency or payment system, is vulnerable to currency risk. They have the ability to lose our Bitcoins and/or national currencies in the

blink of an eye. In the near future, this will continue to be an inherent risk.

Here's a rundown of some of the major shutdowns:

Block chain concerns caused Mogo and other Bitcoin exchanges to shut down; there are splits in the block chain due to competing claims to be the genuine chain.

On June 23, 2012, the exchange was shut down due to a similar issue.

The major shutdowns, on the other hand, took place on April 3, 2013 and April 11, 2013. There were no technical issues. Instead of allowing the market to trade freely, Mogo decided to cool it.

Bitcoin has suffered a number of coding issues in the past, resulting in untraceable Bitcoins on the network. The first, and most serious, occurrence occurred soon after Bitcoin was created. In August 2010, a

transaction generated over 184 million BTC, which was delivered to a few addresses on the network. They were quickly identified as fake Bitcoins (BTC), the fault in the code that created the fake BTC was fixed, and the network was up and running again within hours.

A split in the block chain occurred on March 13, 2013, as a result of a large number of blocks being created that did not match earlier ones due to a change in software and the size of the blocks created. Depending on whether the software version 0.7 or 0.8 was used, this resulted in two sets of block chains. The developers working with Bitcoin.org came to an agreement to use the 0.7 version of the software, with all transactions being verified against that block chain.

Bitcoin surged back following a 23 percent decline in value as a result of the split.

The lesson, though, is that Bitcoin's basic programming can have issues. We all know

that computers are not infallible. This is the problem with Bitcoin.

Scammers, prominent attacks, and bottlenecks

Bitcoin's encryption code is nearly impossible to breach. As a result, hackers are focusing their efforts on using more basic brute force methods to shut down exchanges and steal Bitcoins.

A Distributed-Denial-of-Service (DDoS) attack overloads systems by sending large amounts of bot data visitors. When a major exchange is hacked, the value of Bitcoins falls precipitously. This alone would be enough to entice hackers to take down exchanges in order to clean up the undervalued BTCs. When the exchange reopens, the value of BTC will likely rise, and the hackers will be rewarded—possibly. It's also possible that the hackers are just trying to bring down the service.

A similar attack brought down InstaWallet, which was never recovered. Other potential attacks include:

Government restrictions try to limit exchange access, classify it as an investment, or claim that it is attempting to be a currency that threatens the government's monopoly. All of these are covered by FinCEN (Financial Crimes Enforcement Network):

This black boot agency, which is stifling our economic freedom, is saying:

Bitcoin users are exempt from FinCEN regulations, but any exchange or wallet service is! MSBs, or money service businesses, are what they're called. This means that any service that charges a fee for transferring, exchanging, storing, or interacting with Bitcoins might become a target for the US Treasury, FBI, IRS, and any other agency that decides to engage.

This is by far the most serious threat to

Bitcoin. Our Bitcoin developers, who remain anonymous, foresaw this attack. Their solution was to disseminate the ability to trade Bitcoin.

They included a "black market" in the design. What they truly built in was the ability for free people to transact without anyone else knowing about it, taxing it, or stopping them.

The government will not be able to completely eliminate Bitcoin unless it shuts down the Internet and/or the electricity system. That isn't going to stop them from trying, though.

MAKING MONEY WITH BITCOINS

“Civilization and profit are inextricably linked.”

Calvin Coolidge was the president of the United States during the 1920s.

Trading successfully in any market involves extensive research, a good sense of pattern detection, and a thorough understanding of past trends and evaluation methods. Only the fundamentals of trading are covered in this section.

Surprisingly, following fundamental trading

rules typically yields the best results. More advanced trading systems, often known as scalping systems, necessitate more work and provide modest earnings, if any at all.

We'll go over the basics of buying and selling Bitcoins, as well as decision criteria for when to purchase and sell (the basis of trading), and Bitcoin trading robots and services.

Bitcoin trading

Anyone who is eager to transact with us can buy or sell Bitcoins. For example, we could use localBitcoin.com to purchase Bitcoins in our area.

Here's an example of a screen:

There are a few noteworthy and important innovations in this market:

As we might assume, online costs are more constant.

Local prices are both higher and lower than those found online.

The gap in pricing between the lowest and highest prices might be as big as 24%. Ignore the erratic $256.20/BTC price. The rest of the world will.

This is essential knowledge for day trading settings. We may buy Bitcoins in amounts of up to $1000 for $122.96. Then we could sell them for $140.81 all day.

Our profit is approximately 8 x $17 = $136. (We will neglect gas costs, and buying fractional amounts of Bitcoins)

We could even acquire Bitcoins online and then resell them locally for a profit. The $153 and $147 sellers appear to prefer this straightforward trading technique.

All we have to do now is follow the instructions outlined in the section under "How to Use Bitcoins." In a nutshell, we

acquire Bitcoins with a custom-created address from a Bitcoin exchange using our Dollar, Coin base, Blockchain, or other wallet. Mogo, Bitcoin-24, Bitcoin7, and other options are available.

After that, we register for Local Bitcoin. We're in the Bitcoin trading industry now that we've posted our price on their "Sell Bitcoins" section. While this "arbitrage" technique of trading might yield a reasonable return, more aggressive profit hunters can make higher gains.

The ideal way for us to trade Bitcoins is to do it exclusively online. We will purchase BTC using our national currency on a trading exchange, and then sell BTC for either our own or another national currency.

On some exchanges and in other countries, changing currencies is not permitted. Switching currencies on the buy and sell sides of our trade might also add a layer of complexity to our transaction. Unless we

have prior FOREX trading knowledge, it is preferable to remain with one national currency.

For a new account that hasn't been financed yet, here's how a BTC Buy Order with Mogo looks like:

We can enter any amount we have funded under "Amount of BTC to BUY." This is $0.00 for this new account. For most new accounts, it might be as much as $4000 at first. Some exchanges have no constraints, while others have time-based limits.

The “Price per coin in USD” is set at 127 and change by default. As we wait for the order to be executed, it will move up or down. This is a critical factor to consider. The price we pay is influenced by speed, timing, and execution.

There may be a lag after we enter the Amount of BTC to Buy and press the BUY button, but the order is usually performed instantly.

Presto! We're a Bitcoin speculator!

Now, when it comes to the specifics of selling Bitcoins, the fields are nearly identical, with one notable exception. The exchange takes a cut of the transaction in the form of a lower selling price when we sell Bitcoins. Other exchanges function in a different way.

The "spread" refers to the difference between the BTC Buy and Sell prices. The Bid/Ask spread is another name for it. Bid for the price that buyers are willing to pay, and ask for the price that sellers are willing to accept.

The BUY/SELL price in this situation is around $0.40 USD. It's not a big spread; it's less than 0.5 percent of the trade.

The good news is that trading Bitcoins is not a time-consuming process. In/Out fees, or round trip charges, are often less than 1% of the trade and are often free. In/Out charges between bid/ask, commissions, and exchange

fees can be as high as 3% or more for some stock, options, and commodities dealers.

Other Bitcoin exchanges work in a similar way as Mogo when it comes to trading.

This isn't automatic or electronic trading; it's all manual entry. If we time our trades and directions appropriately, manual trading can produce spectacular results. The next section focuses on answering the question of whether to go up or down and when.

BITCOIN TRADING PRINCIPLES IN GENERAL

Three general trends are emphasized by trading technicians:

The macro or long-term trend is the first and most significant consideration. A secular tendency is another term for this.

The medium or primary term trend is the second. The micro, secondary, or short-term trend is the third.

These terms apply to various time periods for various markets, however they are loosely divided as follows:

Macro/Secular is defined as a period of more than 5 years but less than 25 years. From the 1970s until 1980, gold and silver were in a secular or macro bull market.

Primary/medium term trends last a year or more, but not more than four years in most cases. For several years, the broad stock market in the United States, as measured by the S&P500, has been in a secondary bull market.

Micro/secondary trends are those that last less than a year and usually refer to movements that last a few weeks or months. The current stock market decline in the United States is most likely a micro bear or downtrending market. It will confirm that this was a secondary downtrend rather than a shift into a secular bear market if it reverses and moves higher.

Everything appears straightforward until we have to choose whether to go up or down. To make a perfect trade, we only need to get one decision right. So, what is the long-term or macro trend for Bitcoins in relation to the US dollar?

The other two trends, primary and secondary, are both more difficult to predict and offer a smaller profit margin. We'll go through how to spot such trends shortly, but first, let's look at the millionaire maker, also known as the macro or secular trend.

In a nutshell, the answer is "up." Bitcoin is designed to increase in value on an annual basis.

Bitcoin has various dynamics working in its favor in terms of boosting its exchange value over time:

Almost all national currencies are "printing" Bitcoins in large quantities. As of this writing, there are about 12 million BTCs in

circulation, while the Federal Reserve creates about $85 billion in USD each month to buy government securities.

Taking an estimate of the total amount of US cash in circulation and dividing it by BTC yields an astounding number for the potential value of $/BTC.

M2 is a predictor of the currency available for transactions in the United States that is in the middle of the range. M3 is the most general but now defunct form, whereas M1 is more specific to cash on hand. According to Federal Reserve data, M2 is around $10.5 trillion.

If only ten percent of M2 funds were invested in Bitcoin, the total value would be around $1 trillion. This appears to be:

$1,000,000,000,000 divided by 12,000,000 equals $83,333 per Bitcoin.

Yes, it is quite unlikely that ten percent of M2

will end up in BTC. More likely, and as of now, the number of BTC participants entering the market on a monthly basis is increasing. So all we need is 1% of the global M2 value, which includes active traders from Japan, China, Russia, Europe, and Africa. Unless an exchange defaults or a government takes it down forcefully, Bitcoin's value will rise over time.

Bitcoin is a global currency. Almost 70% of searches for the term Bitcoin originate outside of the United States. Asia is the driving force behind much of the Bitcoin trade; Asia is growing at a significantly quicker rate than the United States. Anything that is linked to Asian growth will exceed growth patterns that are centered on a single country.

Increased taxation and seizure around the world will encourage people to use anonymous currencies that are not governed by a central authority. Many investors in Europe, the United States, and Asia were

shocked to learn that Cyprus banks and the government had stolen up to 60% of some bank accounts.

Bitcoin wallets completely circumvent the threat of confiscation. No bank has the authority to shut our Bitcoin accounts or wallets. We have the option of storing our Bitcoins on our laptops, USB devices, or even memorizing them. Bitcoins were created to address just this need: a private, decentralized, potentially anonymous (and so nontaxable) unit of account that could not be confiscated.

Bitcoin is being accepted in an increasing number of establishments. The acceptance rate (over 1000 establishments) is difficult to quantify, but there is already a core of stores that convert the virtual worth of BTCs into hard things. BTCs gain credibility and utility as a result of this translation. It will be easier for retailers to convert to taking BTC once the price has stabilized at $100.

The wild swings in BTC exchange rates made it difficult for retailers to price their items. Furthermore, because there is a limited supply of BTC circulating, there is insufficient demand because the user base is small. The distribution of BTCs can spread when bitcents are traded, and even microbits and lesser denominations are more popular.

Having a wider distribution, there will be more customers with BTCs to spend, resulting in stores being able to meet demand.

Nightclubs in New York City, such as EVR, already take Bitcoins via a phone app. Such trend-setting shops will help Bitcoin gain the necessary popularity to close the gap with traditional, centralized currencies.

No substantial competition can match Bitcoin's established user base, which has grown over the last four years. Bitcoin's rivals are already raising funds and preparing to take over. They'll struggle to succeed because their benefits are insignificant, and they'll have to establish a new user base. In a

subsequent part, we'll talk about Bitcoin's future and potential competitors.

The general trajectory for Bitcoins relative to national currencies will be significantly upwards due to all of the above considerations. This pattern will continue for many years, potentially even 20 years, until there are currency system conflicts.

When comparing BTC to our national currencies, we can then buy the long-term trend and sit tight while our money grows.

The simplest trading system is also one of the most effective for primary and secondary trends.

The chart below (from http://www.Bitcoincharts.com) shows a four-month price window of closing prices, with exponential moving averages of ten and twenty-five days, and Bollinger bands in the purple or shaded portion:

Extreme moves, in which the short-term trend diverges dramatically from the longer-term trend, are what we're looking for. This indicates the possibility of a bubble or reversal. During the period of April 1-11, an excellent example occurred. The figure indicates where the danger zone occurred using the Bollinger bands and the two exponential moving averages represented by the brown and purple lines (for those with black and white readers, the 10 day is usually always above the 25 day EMA line). All seasoned traders realized there was a sharp drop on the horizon.

There were cautions on the Financial Survival Center (http://www.financialsurvivalcenter.com) and @financialsurvvl twitter feeds to sell out of BTC right away. Jump off the BTC ride into a national currency when the price breaks out of the upper bounds of Bollinger bands and the short term EMA climbs substantially higher than the long term EMA.

When the BTC price falls deep into the Bollinger bands and the short term EMA line crosses below the long term EMA line, however, it is a good time to buy. Then, as the short term EMA re-crosses above the long term EMA, we can ride it back up.

The fact that there is a set amount of BTC in the system allows us to perform these deals with confidence. It has a high upward trend bias as a result of this. We also know that when a price surge is excessively large, the subsequent decline will be rapid and relatively brief. All of this information comes from our most key prediction: Bitcoin is in a secular bull market relative to all national currencies.

This is all done by hand. Key strategies used in more automated trading include:

Stop-Loss orders are a type of stop-loss order that is (for selling based on a triggered loss level)

Stop Aging (time based selling)

Price to aim for (buying or selling based on reaching a price)

Protection for Purchase Orders (forces over priced orders to below current market rate)

The most important tools are the stop loss and target price. In a market with a high beta, the stop loss should be set as high as 20% or even 25%. A ten percent stop loss, often known as a tight stop loss, can be used in lower beta markets. This corresponds to a $100 investment with a stop loss of around $80.

While there might be a lot more said about various trading strategies, this basic understanding will serve. For selling and buying, we can spot the too highs and too lows. That's all there is to it when it comes to making money with Bitcoins.

The problem for individuals who want to learn more about trading any currency or

market is that there are just too many books and courses accessible. A free newsletter for trading, general investment, alternate income, and alternate currency investing is available from Financial Survival Center.

APPLICATION DEVELOPMENT FOR BITCOIN

Trading robots are becoming increasingly popular in Bitcoin trading. While we may see this as a threat, it has the potential to save Bitcoin. As previously stated, Bitcoin has a significant level of volatility, or Beta. This volatility can be reduced by using trading robots. When there is movement in the market, trading robots, or software, that connects to trading exchanges via Application Development (Programming) Interfaces, will perform frequent tiny trades.

Scalping trades are frequent trades with modest profits (and losses). Because price

changes instantly result in buys or sells against the trend, they help to keep the market stable.

Mtgox.com offers two types of automated trade platform APIs:

HTTP API (Hypertext Transfer Protocol)

API for streaming we sockets

These standards for trading provide access to all important trade information.

A few PHP-based trading bots were available for free, but they were immediately removed from websites. A constantly profitable robot is extremely valuable. The ability to recognize price patterns quickly, execute quickly, and avoid substantial losses is the essence of what makes the robot operate.

Trading software robots have several drawbacks. When they gain too much market share, they have the potential to crash the

market. This is what happened in part during the infamous Black Monday crash in October 1987. With computerized trading platforms, mutual funds sparked excessive selling.

Bitcoin's and Other Alternative Currencies' Future

"Whoever declines to seize a once-in-a-lifetime opportunity forfeits the reward as if he had failed."

There Are Both Possibilities And Risks Ahead

MtGox.com's traffic estimation chart for only U.S. web access looks like this:

Going from 5k to over 25k unique visitors per month (UV) illustrates that both Bitcoin and mtgox have a bright future ahead of them. International online access graphs would show considerably more growth. The bulk of Bitcoin users are from countries other than the United States.

The following are some of the opportunities being pursued and provided to the market:

Bit banknotes, Cassascius, and other physical forms for Bitcoins.

There are apps for Android, iPhone, iPad, Windows, and Linux, among other platforms. Currency, an Android app for converting currencies, now supports Bitcoins. Bitcoin Wallet for Android and many others allow us to use Bitcoins from our phones almost like a credit or debit card. We can either scan, beam, email, or use a web interface to enter our Bitcoin address and wallet information from a produced QR code (plus other types of withdrawals not yet fully functional).

BitPay, Okay, Mogo, Dollar, and more merchant services are making it easier for retailers to accept and cash out BTC.

Trading platforms are popping up to dethrone Mogo's hegemony. Mogo is not well-liked by all because it has ceased trading at vital times

and frequently has lower prices.

There are a slew of competitors on the horizon as well. So far, Ripple has been the largest and most well-funded.

Ripple was created by a firm called Open Coin Inc. and is based on Bitcoin-like concepts. Ripple, like Bitcoin, is open source and distributed across a network. One of the most significant changes is that there are now around 100 billion ripples in the system, but they are fed into it on a controlled basis.

It also leverages a concept known as social capital to support financial capital. It also contains trust capabilities that let you to choose which networks to use for payments or transfers. The fact that Open Coin Inc. is funded by prominent Wall Street venture capital firms has the Bitcoin community suspicious.

Ripple is emblazoned with the betamax logo. Bitcoin is operational, has gotten off to a

faster start, belongs entirely to a volunteer community, and is unrelated to Wall Street interests.

Lite coin, Lucre, OpenMoney, Open Coinage, Voucher-Safe, and a slew of other digital-only competitors are among them.

Embattled competitors that aren't growing but have physical assets like gold and silver to back them up include:

- Pecunix
- GoldMoney
- BullionVault
- PerfectMoney
- LibertyReserve
- Tecnocash

- C-gold

e-gold was previously accessible.

Global Digital Payments

These gold or silver-backed currencies aren't generally accepted, exchanged, or used. They do have the advantage of being backed by tangible precious metals and convertible into them. Their future, however, is bleak unless they get widespread commercial adoption.

Most importantly, efforts are being made to back Bitcoins with gold or silver. This is a crucial step towards establishing BTC as a usable form of currency. There are other arguments for not going this step, including the fact that it decentralizes the network if gold must be stored. A de facto gold backing, on the other hand, would suggest that the value of a BTC is respected enough to be exchanged for gold.

Alternative Currencies; Agents for and Against Bitcoins

Governments, banks, the Federal Reserve (and all central banks), Visa, MasterCard, American Express, taxing authorities, and some tech corporations like Apple, Microsoft, Google, and Amazon, as well as the United Nations, all oppose Bitcoin.

Bitcoin has the potential to bring many banks down in the long run. When we can provide our own banking services through choice, no more credit card fees, bank account fees, or restricted interest rate schemes may thrive.

On the plus side, Internet software organizations are enthusiastic supporters of Bitcoin. It has become ingrained in the minds of the younger generation. While their central banks create tremendous inflation, Asia is depending on Bitcoin to keep its hopes of increasing prosperity alive. Bitcoin will be used by those who do not want their money confiscated (as the Cyprus event

demonstrated).

Those who support Bitcoin are more numerous, dedicated, active, and astute than those who oppose it. Bitcoin appears to be on its way to victory.

Getting a Glimpse of Bitcoin Prices

Based on the M2 value in the United States, we've determined that $/BTC might be valued more than $80,000.00.

When all of the world's currencies are factored in, the total rises by a factor of four or more.

What matters more than the cash value of a BTC is what it will be worth in the future. Between now and 2139, when the last Bitcoins are mined, a currency regime shift is possible and likely. What will we be able to purchase with a Bitcoin, or a dollar for that matter?

As has been the case since 1929, the US dollar will buy less of the important items over time. Over that time, the value of a dollar has dropped by nearly 97 percent. Bitcoins will rise and fall, but not tumble like a waterfall until they are attacked and stopped by governments or banks. Bitcoins will continue to gain market share, pushing national currencies aside.

MARKETS FOR BITCOIN EXPANSION

Bitcoin enterprises have a plethora of options.

Bitcoin consulting for integrating Bitcoin appliances with online and offline retailers, pricing, out-conversion, marketing, and trading.

Creating and distributing Bitcoin trading robots. This is a great opportunity for people with the software talents to tackle the coding as well as the trading expertise to make the robot profitable.

Bitcoin financial transfer agents for

converting from debit cards, credit cards, loans, gold, silver, local currencies, and other currencies, as well as making transfers. Bitcoin is viewed as a threat by the old guard institutions. This creates a window of opportunity for individuals determined to overcome the MSB obstacles.

Bitcoin network monitoring codes are used to notify Bitcoin users when there is unexpected behavior on the network. This would be comparable to how futures in the stock market predict the market's direction before it opens. Bitcoin consumers could be notified when a market-moving event occurs and make informed decisions as a result of this service.

Bitcoin ad network (Bitcoin ad network). One of the most serious problems with Bitcoin is that it is difficult for businesses to use it to purchase business services. The Bitcoin flow from online retailers will be absorbed by an advertising network designed for Bitcoin users. Google refuses to convert to Bitcoin,

thus another avenue is needed.

Bitcoin seems to be here to stay. Frequent updates regarding trade and Bitcoin happenings can be found at:

http://www.financialsurvivalcenter.com

Sign up for the newsletter and follow @financialsurvvl on Twitter for frequent trading advice, risk warning, and investing methods on Bitcoin and alternative investments.

One of the most active forums about Bitcoin: https://bitcointalk.org

To a future of Bitcoins…and freedom.

Your Bitcoin Guides,

Mark D. Solomon & Daniel Forrester

What Is the Purpose of Privately Created

Money?

We, the writers of this handbook, are skeptics of the modern state and believe it poses a significant threat to civil and financial liberty. The most obvious disadvantage of government-issued money is the risk of hyperinflation, which occurred in the German Weimar Republic between World Wars or in Zimbabwe today. Even moderate inflation, however, necessitates a systematic transfer of wealth from those who own the currency (or other assets denominated in it) to those who have the authority to produce new money. Some supporters of this system say that wages and prices adjust to balance things out, but think about it: if someone provided you a printing press that could print legal tender notes, wouldn't you see how that would help you?

Indeed, the State—and the banking interests with which it is associated—protect their money monopoly because it is so profitable. When the government wishes to spend more

than it can raise from taxes and private loans, it is very easy to cover the gap by creating new money. To be sure, things are much more subtle these days than when rulers would “debase” their coinage by adding base metals 2, but the end result is the same: central governments are able to spend more—on both welfare and warfare—than their subjects would ever support through open taxation and private lending, because central banks are ready to issue new money and absorb unused reserves. When the central government may generate money at will, all the nice norms entrenched in formal constitutions are fairly impotent.

There is yet another serious issue with money controlled by the government. New money enters the economy through the banking system in our modern, state-sponsored society.

2 See Robert P. Murphy's "The Fed as Giant Counterfeiter," a Mises Daily article from February 1, 2010, at

https://mises.org/library/fed-giant--counterfeiter-sector.

This suggests that monetary inflation does not raise prices in a consistent manner. Instead, certain prices are distorted first, and the system adjusts to the rise in money quantity gradually.

Specifically, during a period of severe monetary inflation, interest rates are artificially lowered, allowing money to flood into the economy via the credit markets. The central bank and commercial banks, on the surface, appear to be creating additional money by granting more loans. The only way to make these loans more accessible to the general population is to reduce their cost, or interest rate.

We're not presenting any fresh insights here; this is a textbook description of how modern central banks employ "open market operations" to inject new reserves into the banking system, which are then pyramided

into the creation of more money by the magic of the "multiplier" by private commercial banks. According to conventional wisdom, the central bank can lower interest rates by producing fresh money in this way. The only distinction is that traditional analysis claims that this is a positive practice during a downturn.

We, on the other hand, believe in the business cycle hypothesis proposed by Austrian economist Ludwig von Mises and his follower, Nobel Laureate Friedrich Hayek. The artificially low interest rates, according to Mises and Hayek, aren't helping the economy. Rather, they merely send out erroneous information, causing businesses to embark on ventures that cannot be funded with legitimate savings. Low interest rates appear to “cure” a recession and restore prosperity, but this is a ruse: the central bank's actions just inflate another bubble that will eventually explode. When the dot-com bubble of the late 1990s was followed by the housing bubble of the mid-2000s in the

United States and Europe, it was a superb instance of this process. 3

3 Depending on the reader's individual area of interest, there are various books available to learn more about these themes. Take, for example, Richard Ebeling (ed.)

For many individuals, the Federal Reserve's (and other central banks across the world) response to the 2008 financial crisis highlighted the weaknesses in the current, State-dominated economy, when massive quantities of new money were (electronically) generated to bail out firms considered "too big to fail." Beyond the dubious economic merits of such actions, the fact that they were kept secret—Ben Bernanke, for example, testifying to Congress in December 2008 that disclosing the beneficiaries of the Fed's "extraordinary" lending operations 4 would defeat the purpose of the Fed's actions—confirmed for many skeptics that the modern entanglement of money and the State benefits the elite at the expense of the general public.

Before Bitcoin, there were examples of private money.

The preceding section outlined some of the major issues of those who oppose the government's monopoly on money. Rather of relying on the government for money, private persons should be able to generate it.

Originally, commodity money was created by the market, and the thing that the society used as money was likewise a common commodity that could be traded. Many commodities, including cattle, salt, shells, and even cigarettes, have served as money at various times and locations throughout history. However, as the industrial revolution progresses,

https://mises.org/library/austrian--theory--trade--cycle--and--other--essays; Carlos Lara and Robert P. Murphy, 2010, How Privatized Banking Really Works, accessible at: http://consultingbyrpm.com/uploads/HPBRW.

and Murray Rothbard, 2008, The Mystery of Banking, available at: http://mises.org/library/mystery-banking-1. At the end of this guide, you'll find complete bibliographical citations.

4 For example, see Mark Pittman's December 12, 2008 Bloomberg article, "Fed Refuses to Disclose Recipients of $2 Trillion," available at: http://www.bloomberg.com/apps/news?pid=newsarchive&sid=aGvwttDayiiM, which refers to Bloomberg News' November 7, 2008 Freedom of Information Act request and the December 10 Congressional hearing. The Fed's official response was that disclosing the names of the financial institutions using the Fed's new emergency programs would cause investors to dump these firms, undermining the entire rationale of the programs. When capitalism swept the world in the relatively free-trade era of the 1800s, advanced nations chose gold and silver as their commodity monies of choice.

Critics of government-issued “fiat” money

(money that is not backed by any other asset) have long wished for a return to “hard” commodity money, such as gold. To be clear, proponents of "gold money" do not necessarily anticipate individuals purchasing homes with gold bars. Instead, they envision a society in which the fundamental unit of money is a certain weight of gold, and no single institution is "in command" of the money supply because miners are located all over the world. Private mints might stamp recognized (and difficult to counterfeit) gold coins, and private commercial banks could accept deposits of physical gold in exchange for issuing debit cards and checkbooks, making large purchases in gold money more convenient. 5

Some economists, such as Nobel Laureate Friedrich Hayek and Benjamin Klein, have even advocated for the usage of fiat currencies as long as they are issued in a competitive market.

6 Rather than having people choose between

the dollar issued by the Federal Reserve, the euro issued by the European Central Bank, the yen issued by the Bank of Japan, and so on, some economists imagined private companies issuing their own (unbacked) notes and electronic claims, with the reputation and "monetary policies" of the individual companies providing customers with a much more appealing suite of currency options. After all, having Apple and Microsoft fight in the software market produces a lot of results. 5 Murray Rothbard's 1962 book The Case for a 100% Gold Dollar provides an accessible yet extensive introduction to the history of money and the restoration of gold as money. See George Selin's 2011 book Good Money for a discussion of the historical gold standard and private mints.

6 Hayek's 1976 book The Denationalisation of Money is the most prominent example. See Robert P. Murphy, "Hayek's Plan for Private Money," http://mises.org/library/hayeks--plan-private-money, for a discussion of his

idea.

However, Benjamin Klein's 1974 article in the Journal of Money, Credit, and Banking, “The Competitive Supply of Money,” produced better results for consumers than having (say) the governments of the United States and Russia write all of the computer code, so why not do the same with money? Perhaps privately-issued fiat money could preserve the putative benefits of fiat money (such as the ability to save money on rare physical commodities) while avoiding the evident problems of state-issued fiat money.

BITCOIN MAKES AN APPEARANCE

In this perspective, one can understand the uncertainty and excitement that Bitcoin sparked as more people, first computer enthusiasts and later more politically minded people, became aware of its qualities and potential.

On the one hand, Bitcoin appeared to be yet another privately issued fiat money, similar to those described by economist Benjamin Klein as early as 1974, but with a digital twist for the Internet age. Bitcoin, on the other hand, was considerably more. Bitcoin was a currency system, as the title of Nakamoto's

famous white paper declares, and it was also a peer-to-peer system.

This is a major step forward from the traditional view of privately issued money. For example, in Hayek's vision, each currency would still be issued by a single institution, which could (in theory) easily break whatever promises it made to the community about the rate of money supply expansion. To be sure, private competition and other contract enforcement mechanisms would make private enterprises far more trustworthy than governments, but Hayek's (and similar) plans rely on trust.

Satoshi Nakamoto (perhaps a pseudonym) produced the renowned white paper "Bitcoin: A Peer-to-Peer Electronic Cash System" in November 2008, which may be seen at https://bitcoin.org/bitcoin.pdf. In what is known as the "genesis block," Nakamoto mined the first 50 bitcoins in January 2009.

The Bitcoin protocol, on the other hand, does

not require trust because it is based on a peer-to-peer foundation. Nobody is “in charge” of Bitcoin, as we will discuss in detail in the next sections, thus no one has the power to breach its rules and violate the public's confidence. This feature of Bitcoin allows it to function as a payment unit as well as a method for sending money around the world with extraordinary ease.

It's difficult not to be amazed by the vast potential once the really revolutionary feature of Bitcoin seeps in. Indeed, some aficionados regard the introduction of the “blockchain”—a Bitcoin word we'll go over in detail in later chapters—as a crucial technological and cultural turning point in humanity's evolution. 8

We'll focus on the guts and bolts of Bitcoin in this guide, but we'll need to set the stage first to grasp the significance of our conversation. With a solid grasp of Bitcoin's operation, the reader can turn to other speakers and authors to examine the future ramifications of Bitcoin

(and comparable crypto- currencies).

Jeffrey Tucker, a libertarian, is one of the most vocal supporters of Bitcoin in this regard. Bit By Bit: How P2P [Peer to Peer] Is Freeing the World is his upcoming book.

How Bitcoin Works: An Overview of the Protocol

The term "bitcoin" refers to two concepts that are related but not identical. Individual bitcoins (lowercase-b) are digital currency (fiat)9 units. Second, the Bitcoin (uppercase--B) protocol rules the decentralized network in which thousands of computers across the world retain a "public ledger"—known as the blockchain—that keeps a fully transparent record of every authorized bitcoin transfer since the system went live in early 2009. In a nutshell, Bitcoin is both a digital money with no backing and a decentralized online payment system.

"Bitcoin employs peer-topeer technology to

operate with no central authority; processing transactions and issuing bitcoins is done out collectively by the network," according to its official website.

Anyone who wishes to participate can download the Bitcoin software to their computer and join the network, participating in "mine" operations and assisting in the verification of transaction history.

To truly comprehend how Bitcoin works, one must first master the nuances of public-key cryptography, which we will cover in the following sections. For the time being, we'll stick to an example that conveys Bitcoin's economic essence while avoiding the need for new nomenclature.

Because the Bitcoin network is totally voluntary and does not rely on State-enforced legal tender rules or other methods of stifling competition, some Bitcoin advocates may object to our description of it as a "fiat" currency. However, the term "fiat" has a very

specific meaning in monetary economics, and bitcoins would fall under that definition. (For an academic discussion, see Ludwig von Mises' The Theory of Money and Credit.) In instance, it is simply not true that the government may declare something to be money "by fiat." Rather than avoiding the potentially negative connotations of our use of a term that is usually reserved for low--quality money issued by modern States, we believe it is more important for the beginner to understand that there is no other commodity or asset “backing up” bitcoins—and thus it is a fiat currency—we believe it is more important for the beginner to understand that there is no other commodity or asset “backing up” bitcoins.

For more information, go to http://Bitcoin.org.

An Analogy to Help You Understand Bitcoin's Basics11

Consider a community where the currency is

based on the integers 1, 2, 3,..., up to 21,000,000. One individual "owns" the number 8 at any given time, while another "owns" the number 34,323, and so on.

Bill wishes to buy a car from Sally in this scenario, and the price label on the automobile says "Two figures." The numbers 18 and 112 happen to be in Bill's possession. So Bill gives Sally the two numbers, and Sally hands over the automobile to Bill. The community is aware of two facts: Sally's ownership of the car has been transferred to Bill, and Sally now owns the numbers 18 and 112.

An industry of thousands of accountants keeps track of who owns the 21 million integers in this hypothetical community. In an Excel file, each accountant keeps a massive ledger. The rows record every transfer of a certain number, while the columns go from 1 to 21 million. When Bill acquired the car from Sally, for example, the accountants who were there entered "Now in possession of

Sally" in the next available row, in the columns for 18 and 112. If we look one row above in these ledgers, we'll read "Now in the possession of Bill" for these two digits, because Bill owned them before he gave them to Sally.

Aside from capturing any transactions that occur within earshot, the accountants also compare their ledgers against those of their neighbors on a regular basis. If an accountant realizes that his neighbors have recorded transactions for different numbers (i.e., for trades that the accountant was not present for), the accountant fills in the empty row entries in the columns for those numbers.

As a result, there are thousands of 11 at any given time. Robert P. Murphy, 2013, “The Economics of Bitcoin,” available at: http://www.econlib.org/library/Columns/y201 accountants, each of whom knows a virtually comprehensive history of all 21 million numbers.

We're dealing with the final state in our comparison, after all of the bitcoins have been "mined." This will happen after the year 2100, when the public will have access to (nearly) all of the 21 million bitcoins. 12 When people wish to buy something using Bitcoin in the real world, they sell a particular number of bitcoins to other people in exchange for goods and services. The network of computers involved in this transaction performs computations, modifying the "public key" to which the "sold" bitcoins are ascribed. This is similar to the accountants in our narrative adding a new name to the column for a specific integer.

What Role Does Cryptography Play? The Issue of Unknown Owners

To begin, despite the fact that the term "encryption" is frequently used in this context, Bitcoin does not use encryption because it does not address the essential problem. We don't wish to hide the

transaction messages; instead, we'd like to verify them. 13

12 The total number of mined bitcoins will never reach 21 million since the protocol assures that the reward for mining a new block will eventually be rounded down to zero bitcoins (sometime around the year 2140). However, by the year 2108, it is expected that mining would only bring ever smaller fractions of the 21 millionth bitcoin into circulation; see https://en.bitcoin.it/wiki/Controlled supply#Projected Bitcoins Long Term.

Another difficulty is that throughout the decades, some (fractions of) bitcoins will be "lost" when people die, forget their private keys, and so forth. As a result, even though these (fractions of) bitcoins will have been mined, they will remain unreachable in transactions for the rest of their lives, thus removing them from the public's "quantity of bitcoins." They'll be worth the same as gold coins that sank with a ship and are now

buried at the bottom of the sea.

13 The fact that both encryption and authentication are topics in the discipline of cryptography may be the source of the misunderstanding. They're also "dual" in the sense that in public key systems, signing a message is the same as decrypting it, and verifying a signature is the same as encrypting it.

Let us return to Bill and Sally's imaginary universe, where money is based on publicly acknowledged "ownership" of the 21 million integers. We need to address one major issue in our previous story: how do accountants authenticate the identification of persons who try to buy goods using numbers? Bill, in our example, wants to sell 18 and 112 to Sally in exchange for her car.

Bill now owns the numbers 18 and 112, and he can afford Sally's car because she's asking for "two numbers." (By the way, in this

culture, when people say "numbers," everyone knows they mean "between 1 and 21 million," because any integer outside of this range isn't regarded legal tender.) If queried, the accountants will confirm that Bill is the owner of those numbers; in all of their ledgers, it reads "Bill" in the final row with an entry, under the "18" column and the "112" column.

But here's the problem: how can the surrounding accountants know that the human person trying to buy the car from Sally is truly the "Bill" mentioned in their ledgers? There needs to be a means for the real Bill to show all of the accountants that he is the same person mentioned in their ledgers. To prevent an unauthorized party from spending one's money fraudulently, this method must be set up so that only the actual Bill can persuade the accountants that he is the one.

This is when all of the sophisticated

public/private key cryptography comes into play in the real world. To emphasize, we will go over all of this stuff as intuitively as possible in later sections of this tutorial. But, at this point, we'd like to provide readers a fundamental grasp of Bitcoin, even if they don't want to get into the technical intricacies of the message. But, to be clear, Bitcoin does not rely on encryption in the strictest sense, despite the fact that many people believe it does.

Unfortunately, our Bill and Sally scenario becomes a little ridiculous at this point because we haven't been able to come up with an appropriate comparison for this part of the Bitcoin process. So, without further ado, consider how people in our imaginary society deal with the difficulty of matching names in accountants' Excel ledgers with real-world human beings:

Each time one of the numbers is sold, the new owner is required to create a puzzle that only he or she can solve. The residents of the town, you see, are intelligent enough to

identify the correct answer to the puzzle when they hear it, but they aren't nearly as inventive enough to figure it out on their own.

For example, when Bill's employer gave him the numbers 18 and 112—Bill being paid "two numbers" every month in salary—the accountants told him:

"OK, Bill, construct a riddle that we will attach with these two numbers to secure your ownership of them." In our ledger, we'll put the riddle in the same cell as the name "Bill," in the columns under 18 and 112. Then you tell us the answer to your puzzle when you wish to spend these two numbers. Only if the individual claiming to be "Bill" can solve the mystery will we give these numbers to a new owner. Keep in mind, Bill, that when you want to spend these amounts, you might be on the opposite side of town, surrounded by accountants you've never met before. That is why seeing you right now is insufficient. We need to write a riddle in our ledgers that will

be replicated thousands of times as word of this sale spreads throughout the community, so that every accountant will finally have "Bill" and your riddle entrenched in the correct cell in their ledger."

Bill pauses for a bit, then comes up with an excellent riddle. “When is a door not a door?” he asks the accountants. They obediently write down the riddle, which is subsequently passed across the community.

Some villain tries to impersonate Bill a few days later. He wants to buy a necklace with a "one digit" price tag. "I'm Bill," the villain says to the accountants in the room. As you can see, I am the owner of 112, and these spreadsheets are open to the public. As a result, I give this jeweler my ownership of 112 in exchange for the necklace."

"OK, Bill, just verify your identity," the accountants say. What is the answer to your conundrum? "Tell us when a door isn't a door."

The villain ponders and ponders but comes up with nothing. "When the door isn't a door!" he exclaims. "No, that's a dumb response," the accountants agree after exchanging glances and scratching their brains. That didn't help me solve the puzzle." As a result, they refuse to sell the necklace to the villain.

Now, a few weeks later, we've arrived at the beginning of this chapter, where our narrative first began. The genuine Bill wants to pay "two numbers" for Sally's automobile. "I am the owner of 18 and 112," he declares to the adjacent accountants. This is confirmed by my riddle: "A door is not a door when it is ajar."

The accountants are all overjoyed! Aha! That is an excellent solution to the puzzle. They agree that this is the actual Bill and approve the transaction. They write "Sally" in the next-available rows in columns 18 and 112, and then ask Sally to offer them another puzzle, the answer to which only Sally

knows.

ONCE AGAIN, EXPLANING BITCOIN'S IMPORTANCE

Even though we had to stretch the story a little—since the solution to Bill's conundrum would be very easy to anticipate in reality—we believe this is a good approximation to how Bitcoin actually works. Without going into too much detail, the actual owner can execute a mathematical operation that can only be reversed with possession of a specific number. This unique number is known as the "private" number.

key.” Bill's mental power to solve his own

riddle would be equivalent to the private key in our narrative, and the actual solution to the riddle would be his "signature." The machines in the Bitcoin network know that the owner is valid after they are given a "signature" that can only be made by someone with the private key. An outsider would need thousands of years of computational power (at this time) to guess the private key and so make a "legitimate" signature. Even the NSA's supercomputers couldn't "forge" a digital signature to transfer someone else's Bitcoins. 14

Finally, in the real world, people don't have to use their real names, such as "Bill," to identify themselves as the owner of a specific Bitcoin. They can instead use any old identifier. This identity is known as the "public key," and it is visible to everyone. In our example, Bill might tell the accountants, "In your ledgers, call me 'Cool Kat.'" Then, just as before, Bill would have to answer the question to prove that he was "Cool Kat."

Many privacy activists are ecstatic about this characteristic of Bitcoin since it allows Bill to hide how many numbers he has. He can put "Cool Kat" on numbers 18 and 112, but he can put "JamesBondFan" on numbers 45 and 974. So Bill owns four numbers in total, but no one else in the community would know—not even the accountants. According to the records, “CoolKat” owns 18 and 112, while “JamesBondFan” owns 45 and 974. Nobody except Bill notices that these are all pointing to the same person.

14 In actuality, the concern isn't that a rogue could create a "legal" signature without having access to the secret key; that would be nearly difficult. Unscrupulous persons with a lot of computational power (as a portion of the network) can attack Bitcoin in a number of ways; we'll go through them later in the guide. Their tactics, however, would not include faking signatures.

New Bitcoins are being “mined”

For the sake of simplicity, we'll start with the 21 million units of currency that have previously been mined. However, the method by which network computers validate transactions is inextricably linked to the increase in the number of bitcoins. When Bitcoin was first launched in early 2009, computers on the network, known as "miners," were given 50 new bitcoins for executing the computations required to add a "block" of transactions to the public ledger. The reward has been reduced to 25 new bitcoins every block as of this writing, and it will continue to be halved every 210,000 blocks (which will predictably occur about every four years because the computational difficulty of the mining task is periodically calibrated to the recent computational power of the network). The number of new bitcoins issued per block will eventually be rounded down to zero, capping the total number of bitcoins in existence, most likely around the year 2140. (at just under 21 million). 15

Bitcoin's creator(s) could theoretically have

distributed all 21 million units of the money immediately using the protocol.

16 However, that would almost certainly have doomed the project in its infancy. There is an incentive for people to dedicate their equipment' processing power to the network under the existing structure, in which the “mining” tasks required to keep the system working simultaneously yield fresh bitcoins to the machines conducting the calculations (and for them to raise awareness of the new currency). People can pay fees on the side to expedite the verification of a Bitcoin transfer, but the network will eventually execute a transaction even if the parties involved have not added any extra fees (at least in this initial phase). Such a feature is a brilliant strategy to encourage widespread Bitcoin acceptance and assist it in “getting off the ground.” 15 The entire amount of bitcoins mined to date, as well as the expected quantity of bitcoins every mined block, can be found on the Bitcoin wiki: https://en.bitcoin.it/wiki/Controlled Currency

Supply.

16 Others have built comparable crypto--currencies ("altcoins"), and some of them release the units on a separate schedule, as the Bitcoin software is available to the public. Dogecoin, in particular, allows them to be released with no upper limit.

It's Time to Turn It Up a Notch! Making Analogies More Difficult, But Getting Closer to the Real Bitcoin

The analogy of Bill buying a car from Sally above was very intuitive while yet providing a good "big picture" explanation of what Bitcoin is and how it functions as a currency and payment system. However, in order to avoid any math, we skipped over certain crucial considerations about the real-world implementation of such a system in our simplistic story.

First and foremost, how can you make the riddle system work consistently? How can

you create it so that only one person may authorize the signing of integers, but everyone else can verify it? Don't you think you'll run out of riddles?

Second, without a central authority, how do you arbitrate conflicting transactions? How do you pick which transaction to maintain and make official if someone broadcasts two distinct valid messages claiming to transfer the same integer to two different people?

The first problem is a well- It existed for decades before to Bitcoin. Let's go over that in more detail by going over a simple example of a "toy" digital signature system. The arithmetic employed in true cryptography applications is more complicated—and secure—but this toy example should convey the fundamental idea.

We proudly introduce the Cow-Chicken Signature Scheme to this goal. You probably recall a school puzzle that went something like this:

"On his property, a farmer has cows and chicks. His beasts have a total of 5 heads and 16 feet. "How many cows does he have, and how many chickens?" (Chickens have one head and two feet, while cows have one head and four feet.)

In actuality, most individuals would use algebra to solve this problem, and these types of word problems are a fantastic approach to teach kids how to draw out equations using "x" and "y." But imagine (for whatever reason) that we can't utilize algebra or any higher arithmetic to solve our Cow-Chicken puzzle as an analogue for the cryptography used in Bitcoin. Instead, we're only allowed to utilize the "guess and check" method: We just make educated guesses about the number of cows and chicks, then count the matching heads and feet to check if they fulfill the problem's requirements.

There's an asymmetry here: going from cows and chicks to heads and feet is "simple." However, estimating the number of cows and

chicks from the heads and feet is "difficult." In practice, you'll have to go through a lot of "checks" before you come up with the right "estimate."

Keep reading for one more wrinkle, and you'll discover the obvious Bitcoin connection. Assume that one person—call let's her Alice—has the formula for instantly converting heads and feet into the appropriate number of cows and chickens. 17 Alice's secret key is this formula. Remember, this is the "difficult" route, because we're claiming that the general public doesn't know how to do math for some reason. It's simple to go the other way—to convert the number of cows and chickens into the number of heads and feet—but it's difficult to do so "in your head." Alice, equipped with the special formula, appears to have magical abilities in this environment. She was the only one who could rapidly add two numbers (heads and feet) and calculate the number of cows and chickens present.

Everyone else, on the other hand, would be sputtering around, making educated guesses about animal numbers and then mentally "checking" to see if they were correct.

17 Cows = F/2 – H; Chickens = 2*H – F/2 turns out to be the formula. Although it may appear foolish, working through our specific scenario will most likely help readers "get" the purpose of this analogy. To reiterate, if we say a farmer has three cows and two chickens, we can easily calculate that he has five total heads and 16 total feet. However, if we told you that a farmer has animals with a total length of 5 heads and 16 feet, most individuals would need many guesses to figure out the answer. Using the formulas above, however, the answer appears instantly. Their estimations were correct since the number of cows is (16/2) – 5 = 3, and the number of chickens is (2*5) – (16/2) = 2.

The public key is the arithmetic problem she uses—the fact that it's about cows and chicks with their appropriate number of heads and

feet—and it also serves as an account's address. After she's formatted her Bitcoin address, Alice might say something like "1/4-1/2," which also informs you what math problem she knows the quick solution to. (Perhaps the residents of this town have agreed to use the formula "first animal: heads/feet-second animal: heads/feet.") in their addresses.

That's why Alice writing "1/4-1/2" would signal to anyone knowledgeable with the convention or protocol that she was claiming to be able to solve a Cow-Chicken problem fast, rather than a Cow-Spider problem.)

PUTTING EVERYTHING TOGETHER

We may now picture how the entire system would work, similar to Bitcoin, with our setup:

When Alice wants to sign a Bitcoin transaction, she needs two numbers: the amount of bitcoins she wants to send and the address she wants to send them to. She considers the number of heads to be the transfer amount, and the number of feet to be the destination address. Then her signature is simply the number of cows and chickens, which she can readily calculate using her private key (the secret formula). Assume she

outputs the cows first, followed by the chickens, separated by a colon, for example, "8:2" for eight cows and two chicks.

Consider the following scenario: Alice wishes to give 10 units to address 28. She considers the number 10 to be the number of heads, and the number 28 to be the number of feet. Remember that it's not obvious to the rest of the community how to take "10 heads, 28 feet" and turn it into the correct amount of Cows and Chickens. However, Alice can rapidly calculate the number of cows as 28/2 - 10 = 4 and the number of chickens as 2*10 - 28/2 = 6 using her secret formula (i.e. private key). As a result, her signature is "4:6."

"I'm sending 10 units to address 28," she announces to the globe. 4:6 is my signature for this." People can easily test the "4:6" to determine if it works, despite the fact that discovering it would have been very mentally difficult and time consuming: Anyone who wants to double-check Alice's alleged

signature may easily see that 4 cows and 6 chicks equal 10 heads and 28 feet. Bingo! The public trusts that this announcement of "I'm delivering 10 units to address 28" is valid since only Alice is supposed to have the secret formula (private key) that generates a signature to go along with her public announcements of transferring units to recipient addresses. Only she would be able to rapidly locate the "4:6" signature, despite the fact that anybody else could easily verify that it checked out in the opposite direction.

We hope the ludicrous Cow-Chicken example has already shed light on how Bitcoin works in the real world, but let's reinforce the notion by going over the requirements for a signature we discussed earlier:

It is not possible to transfer the signature to another transaction.

Part of the problem with using the term "signature" is that in daily parlance, a

person's signature is the same regardless of the document; you sign your name the same way whether you're signing a credit card payment stub at a restaurant or a consent form at the doctor's office. In the case of digital signatures in public/private key cryptography, the "signature" does uniquely identify the signer, but it is also dependent on the content of the message it is validating.

Consider the above-mentioned transaction to see what we mean. Assume the thief at address 28 notices how Alice "signed" her lawful message to the network, instructing it to send 10 units of her cash to that address. Couldn't he just send a fresh message, approving the transfer of (say) 12 units of Alice's cash to address 28, and pasting in her same "signature" now that the rascal at 28 has seen her "signature"? If Alice had just publicly "signed" something, how would the network know that this request originated from a fraud and not the actual Alice?

The solution is that Alice's digital "signature"

is not a static item made up of a bunch of 0s and 1s, like "John Hancock." The way the protocol works, on the other hand, Alice's genuine signature will vary based on the transaction it is authenticating. In this example, residents would get a message from Alice purporting to say, "I'm giving 12 units to address 28." The ratio of my signature is 4:6.” Those who bother to evaluate this revelation, however, will discover that it does not "check out." They calculate the number of heads and feet that correspond to four cows and six chickens, and the results are 10 and 28, not 12 and 28. They can see that this announcement is false and that Alice did not send it.

Comix I/O editor (http://cmx.io) was used to create 18 stick-figure comics.

It's simple to check the signature...

People can immediately check the signature's validity because switching from cows/chickens to heads/feet is simple.

... but they're difficult to come by.

People can't do better than the guess-and-check technique, so they have to guess a huge number of cow/chicken values until they find one that corresponds to the message for which they want to forge a signature (by assumption in our analogy, but not in the real world), so they have to guess a huge number of cow/chicken values until they find one that corresponds to the message for which they want to forge a signature. Alice doesn't have this difficulty because she is the only one who can generate these signatures so quickly and skilfully because she knows the private key (the quick formula) and keeps it secret.

Creating a Commonly Used Signature System

We need to allow a large number of users to join while preserving separate addresses—and thus separate private and public keys—in a widely utilized system. Alice has "reserved"

the arithmetic problem with cows and chickens in the example above—or, more specifically, the two-animal math problem in which one animal is of "type 1/4" (one head four feet) and the other is of type 1/2. (one head, two feet). Any newcomer must next choose "animals" of several "types." Because there are so few types in this system, the animal does not have to be one that lives on Earth for the purposes of the system. As a result, we'd let users to choose an imaginary "3/7" animal (3 heads, 7 feet), and so on, allowing an infinite number of addresses to be created.

We also suppose that users can choose a "animal pair" (which, as you may recall, serves as a public key and address) and then obtain the "private key" (special formula) a few seconds later while no one else does. Users have the option of selecting as many addresses as they want without stating how many they own, for example.

19 From the users' perspective, it appears like

Alice is sending bitcoins from two addresses, or that two different people are sending bitcoins from their own addresses.

Proof-of-Work Systems: How to Come to an Agreement on the Transaction Order

While the above may appear brilliant, it is essentially a long- Rather, that would be its response to the second issue we discussed earlier: What is the best way to get everyone to agree on which transactions should be included in the global ledger? Digital signatures, as stated above, ensure that you can establish that a transaction was legitimately approved; they prevent someone else from spending your money. But what if someone signs two transfers of the same amount of money (or, to continue our analogy, the same integer) to two separate people? After all, even if Jack the Scammer can accurately construct signatures for his addresses to indicate that he truly issued a command to transfer bitcoins to another person, the community still needs a

mechanism to verify that the bitcoins in question are Jack's to begin with! To put it another way, we must prevent a lawful owner from spending his or her own money more than once. The "double-spending problem" is what it's called.

This is where Bitcoin's ingenious solution comes in handy. To provide some context, the authors of this guide (Barta and Murphy) have always been intrigued by the theoretical possibility of privately issued currencies, but had assumed that they would still require a trusted central party to act as "the authority" on which transactions within its network were valid, and that competition between currencies would ensure that this power was not abused. However, it turns out that even this 19-year-old Users choose a private key at random in the Bitcoin signature system, then go through a quick process to find the associated public key/address.

Users are astronomically unlikely to pick the same key since the space of keys is so

enormous (2160, or the square of the number of grains of sand on the world), especially since they don't know each other's private key and can't choose one that's likely to match others'.

You can handle money and accounting conflicts without the need of a trustworthy third party. Satish Nakamoto's exquisite white paper on Bitcoin contains true innovation in this area. The Bitcoin approach is described below.

Coordinating on the Same Transaction Record with the Blockchain

In a nutshell, Bitcoin achieves consensus on a ledger by enforcing a single rule in the protocol, which we can summarize as:

The central Bitcoin trick is to use the one with the most demonstrated work invested in it out of all the valid ledgers.

Of course, for someone unfamiliar with the

system and cryptography, this only adds to their confusion:

How can you tell how much effort was put into something?

How do people record their time in the ledger?

Why do people put effort into the ledger in the first place?

Let's take each of these questions one at a time.

The Guessing Game as Proof of Work

To begin, consider the following scenario: you and a friend are playing a game in which you are trying to predict your friend's number, which is anywhere between 1 and 1000 inclusive. Your friend makes a secret commitment to a number in advance, and

after each guess, he or she tells you whether or not that number was the one. (After each guess, your friend simply says "yes" or "no" without providing any other information.)

To win, you'll need 500 guesses on average. So, if you and your friend have played a lot, we can conclude that your guess history is close to this figure.

As a result, we may deduce that the total number of guesses you must have made is roughly equivalent to 500 times the number of victories. As a result, the game acts as a form of "proof of labor" in the same way as Bitcoin does: the fact that you won X times is proof (although statistical) that you made 500*X guesses.

Scramblers and Cryptographic Proof of Work: A Guessing Game

You may play a similar game using cryptographic techniques, using what we'll name "Scrambler Functions"

(cryptographically secure one-way functions in jargon). These are functions that are simple to compute one way but difficult to invert. It's simple to compute f(A) given an input A and a scrambler function f(A) (A).

If you only know the output f(A), however, the only way to find A is to predict every possible input.

The "crypto variation" of the guessing game is possible with these routines. Instead of picking a secret number, your friend just tells you his, and your task is to discover an input number that, when run through the Scrambler Function, returns your friend's number. It's just as difficult as the original guessing game, but it allows your friend to reveal his number ahead of time for all to see.

A Cryptographic Guessing Game is an example of a cryptographic guessing game.

Let's have a look at how this cryptographic variation would function. We'll use a simple

scrambler function that's too weak to be useful in practice, but sophisticated enough that you'll get a taste of a function that's difficult to "reverse" and for which guessing and checking is your best bet.

"Raise to the third power, mod 17" will be the scrambler function, or:

f(x) = x3 mod 17 f(x) = x3 mod 17 f(x) =

That is, multiply the input number three times —for example, 5 becomes 5 x 5 x 5—and then divide the result by 17 to determine the remaining.

Alice and Bob engage in a game in which Alice considers the secret number and Bob tries to guess it. Rather than holding a number in her head, Alice publicly "commits" to the "scrambled version" number, also known as the hash. That is, she considers a number, runs it through f(x) above, and then declares the result. Let's imagine she chooses number nine.

20 The reader will notice a similarity to the previous section's "Special Functions." Indeed, they are identical, with the exception that there is no "trapdoor," i.e., no hidden knowledge that allows you to swiftly invert "Scrambler Functions."

(Because of the mod 17 procedure, the only potential outputs she may commit to are 0--16.)

She computes f(9) = 15 using the formula above (read the footnote if you don't understand why21) and only publishes that value. Then it's Bob's job to make educated guesses and run them through the function until he finds one with a result of 15. As a result, he might churn through the following table:

He'd come to a halt at x=9, having discovered that it yielded the number 15. (Note that he didn't need Alice to confirm his guesses because he could figure out whether or not they were correct on his own.) There are 17

possible inputs, as you can see. If we ignore the zero and suppose Alice chose a number at random, Bob will have to examine an average of 8 numbers (half of 16) before receiving the proper response for Alice's announcement.

21 In this case, 93 = 9x9x9 = 729. Then divide 729 by 17 to get 42 "and change." However, 42x17 = 714, which means that when you divide 729 by 17, the result is 42.

This proves that there are "cheatproof" games in which you can be quite certain of how much "effort" someone put into winning. When someone solves a guessing game like this with N potential values, they have effectively shown that they "spent" N/2 guesses. Sometimes the person got lucky and needed fewer guesses before figuring out the solution, and other times the person needed more, but it all evens out over time.

Even if you can show you put in "500 guesses' worth of effort," the question remains:

How Do People Invest Their Time in the Bitcoin Blockchain?

Remember how we can play the guessing game based on a public number and get a proof of work as a result? That number is produced in Bitcoin using the ledger. You take the ledger with the largest proof of work linked to it, add in the additional (signed) transactions you've heard about but haven't included, and come up with a goal figure that is unique to those inputs.

You have a proof of work connected with a ledger update when you find a winning guess (a number that, when run through the Scrambler, delivers the goal or a value close enough22) (known in the Bitcoin world as a block). Other users count all the work proven to be in earlier updates, plus the work associated with your proposed update, when deciding which transaction ledger to regard as definitive. 23

22 In a strict sense, the "target number" is hashed with your guess in order to produce an output that is close enough to zero, but the difficulties are the same.

23 This means that you have an incentive to build on top of the “ledger update set” (blockchain), which currently has the most work invested in it, because you will be able to claim that work as well as the work you put into your own update.

Why Do People Put Their Time and Money Into the Ledger?

In brief, it's because of another protocol rule: If you identify a solution, you can claim 25 new bitcoins for yourself or any address you like.

24 (That is, these are bitcoins that have never been in circulation before.) That incentive is what has led to "mining," or the employment of specialized computers to generate answers

as rapidly as possible in order to profit from the bitcoins acquired in this manner.

One last complication: you might be asking if using specialized, “incentivized” miners results in faster solution production. In reality, another regulation in the protocol states that the "difficulty factor" should be increased or decreased every two weeks to ensure that answers are created every 10 minutes. 25 It's also simple to change the difficulty of a Scrambler Function by requiring a match of more or fewer digits. A solution may have only needed to match the last digit at first, but as more answers are found faster, the "update formula" requires more and more digits to match.

RETURNING TO BITCOIN

The above discussion should have given you a general idea of how Bitcoin operates.

So, let's take a step back and recap. Here's a quick rundown of what happens in the Bitcoin network:

24 According to the standard, the reward will diminish with time, halving every four years until all 21 million have been distributed. It began with 50 people. The winner is also eligible to claim any transaction fees associated with the additional transactions, which aren't required but encourage users to incorporate them as quickly as feasible in updates.

25 We keep presuming that users will follow the protocol (considering the highest-work ledger as definitive, needing a specific difficulty level, rejecting double-spends and invalid signatures, and so on) without explaining why. Users do this because, like any rule-breaking maverick, failing to do so would isolate them from the rest of the network. In the section on creeping centralization, we go through this dynamic in further detail.

Users broadcast a message explaining the transfer and sign it with their private key whenever they want to send bitcoins to someone else.

When a user receives a message indicating a transfer, he or she double-checks the signature and ensures that the address does not spend more than the most recent "verified" ledger indicates. If the message is checked out, the user keeps it and spreads it to others.

All users (or "miners") who want to claim a reward for a solution combine all transactions they know about (i.e., new ones plus those in the most recent confirmed ledger) and turn it into a "crypto guessing game" challenge for that transaction set. They then set about resolving the issue.

When someone discovers a solution, he or she broadcasts it to all other users, together with a bundle of known transactions (the new newest ledger). Anyone who receives one of these checks it and, if it's authentic, broadcasts it to others, just like with individual transactions.

Miners who obtain a new valid solution stop looking for one and accept the most recent ledger as definitive. They bundle new transactions they hear about, add them to this new ledger, and try to solve a new math problem unique to the new transaction set, as they did in step 3), and the process starts all over again.

Review of Security

Let us go over the security consequences of this configuration because they may not be clear.

Users should be aware that they each have their own ledger, as only one of the multiple ledgers they see at any given time will have the most labor spent in it. Those that solve a block (i.e., find the answer for the most recent ledger) have a strong motivation to disseminate the word because it ensures that the rest of the network will accept and expand on their work proving the worth of their award Occasionally, alternative ledger update solutions appear in different portions of the network, each of which becomes the "reigning champion" of that subgroup.

The dispute is settled when someone creates a ledger based on one of the two (or another based on that, etc.) until one is several updates ahead of the other, making it improbable that it would ever "leapfrog" into

the lead. 26

But what if rogues or thieves try to destabilize this peaceful environment? As mentioned in the previous section, forging signatures is theoretically (almost) impossible for any hostile user. Let's pretend they just want to shut down the network by seeking for answers to "empty ledger updates," which means they're trying to prevent anyone from sending bitcoins.

While other miners would add any transactions they noticed, this rogue group would act as if no one had been sending bitcoins the entire time—the crypto-currency equivalent of saying, "Nope, nothing to report here." To be sure, honest miners would continue to publish solutions with the transfers, but attackers would be able to "outrun" the rest of the network by publishing a ledger (that happens to be empty) with more proved effort spent in it if they had enough computational power.

Alternatively, suppose they find solutions as normal miners would, but then post conflicting updates: say, one half of the network sees them send the same 50 bitcoins to one address, while the other half sees it go to another; this is what we mean when we say “double-spending” bitcoins. If this happens, one ledger chain will finally win out, and the other side will be forced to accept the loss because everyone else in the network will have determined that they weren't the beneficiaries of those 50 bitcoins after all.

In more concrete terms, the scenario could go like this: Malicious Mallory signs a 5 bitcoin transfer from an address to Charlie, then signs the same bitcoins away to Diane.

26 An orphan block is the technical word for a ledger update that has been left behind in this manner. Users should wait until the first ledger using it has been "stretched" 5 times before depending on (what will become) an orphan block.

Mallory comes up with one solution (designated A) for the first transfer and another (designated B) for the second. They can't both happen, of course. Mallory then broadcasts solution A to the Charlie-related area of the network, and solution B to the Diane-related section. Mallory (quickly) takes custody of the hammers she purchased from Charlie with her bitcoins, as well as the nails she recently purchased from Diane. The following published solution, however, builds on the one with the transfer to Charlie, and the transfer to Diane is finally overlooked, leaving Diane holding the bag; she surrendered her nails for nothing. 27

What would it take to launch such an attack on the network? The (cooperating) attackers would need greater "hashing power" than the rest of the network combined in order to continuously provide solutions that "beat out" the rest of the network in computational expenditure. 28 This feature assures that the more "honest" nodes in the network—those who simply include transactions they see in

their ledger updates rather than attempting to reject every transaction message or double-spend—the more difficult it is to successfully attack the network.

Though it may appear wasteful to continue computing all of these hashes, they serve a critical purpose: they allow everyone to collaborate on an unforgeable transaction record without needing to trust anyone—as long as dishonest nodes do not control the network.

27 This is the same basic principle that prevents merchants from comparing notes by bouncing a check.

28 It's important to note that we said "consistently." In truth, the 50% threshold for a "attack" on the Bitcoin protocol exaggerates the needs for it to function; if a group of rogues controlled 40% of the system's total hashing power, they could often double-spend bitcoins. The difference is that with a success rate of 50% or more, the attackers are

more likely than not to succeed in a single attack. Sellers could still protect themselves in this case by waiting for more confirmations (ledger updates with a given transaction) before selling their items.

Moving Beyond the Protocol: How Bitcoin Works

The basic Bitcoin protocol was discussed in the preceding chapter. This chapter examines the systems and procedures that have grown up around Bitcoin and have proven critical to the crypto-currency "environment," despite the fact that they were not included in the initial specification.

Dealing with a huge network is what mining pools are all about.

As previously stated, the mining method compensates users based on how quickly they can calculate "hashes." The faster they can generate these computations, the more likely

they are to find a winning "proof of work" at the present difficulty, and thereby mine more bitcoins.

However, when the network's "hashing power" grew, the difficulty factor increased as well. It had gotten to the point that regular modest users may expect to wait months, if not years, to find their first solution and earn their first reward. That wouldn't be an insurmountable problem in and of itself, but keep in mind that the difficulty might rise during that time as well—and it could rise so quickly that the miner becomes uncompetitive before their projected payout arrives, implying that they were mining for nothing.

MINERS ARE GROUPED TOGETHER AS A SOLUTION.

As a result, early Bitcoin users recognized they could pool their resources to create a more powerful guesser. They would appear to the network as a single person who found solutions more frequently. Their predicted per-hash rate of return would remain the same, but their payout would be more consistent. When the pool finds a solution, the reward is distributed proportionally to the number of guesses each member contributed.

To explain it in terms of a guessing game,

consider a group of players cooperating and agreeing to split the profits if someone guesses right, boosting their chances of winning. In this sense, joining mining pools can be viewed as a type of hedging (or insurance), in which a group of tiny miners converts their low probability of a large payout into a high probability of a modest return.

To reiterate, a pool of, say, 1,000 miners does not anticipate to earn (much) more bitcoins over the course of a year than 1,000 miners working alone would earn in the same year. 29 The difficulty is that if a person worked in isolation, his or her bitcoin earnings would be exceedingly erratic, with months of earning nothing and then "hitting the jackpot" after finally solving a block and receiving the entire reward of 25 bitcoins (as of this writing).

The 1,000 little miners might make their individual earnings streams considerably more predictable (but smaller) week to week

by "pooling" their mining efforts into one collective team.

Whether working alone or as part of a team, each miner can expect to earn roughly the same amount of bitcoins over the course of a year, but most individuals prefer a consistent stream of income to an irregular one with the same projected payoff; economists call this "risk aversion." The major reason for organizing mining pools is to achieve this goal.

Keeping a Mining Pool's Members Honest

You might be curious how a mining pool determines how much to compensate each user, as we did. After all, even if everyone helps to increase the number of guesses the pool may make, the great majority of contributors will never find a winning solution. So you may see dishonest miners exploiting a pool by stating, "Well, yeah, we tried that block of numbers, but—gosh, dang

it!—we never discovered a solution." You have to win some to lose some, right? Oh, and don't forget to give us credit for exploring those options if you find one!"

29 We'll return to the question of "economies of scale" in mining pools in the next chapter, which deals with concerns.

However, mining pools have devised a clever solution to this ruse, which is essentially a rebuild of the very proof-of-work algorithm that the Bitcoin protocol employs! A mining pool can verify how much effort its members contributed to a solution in the same way that Bitcoin users can check how much labor someone spent on a problem.

Consider the cryptographic guessing game: you designate a target output number, and the guessers must identify an input number that, when run through the scrambler function, produces the target number. Let's pretend there are 1,000 possible outputs, and you need to estimate a thousand of them to be

sure of a solution. On average, you'll find one after 500 guesses.

Assume that the miners who joined the pool are aware that they are attempting to "reach" the target number of 747. So everyone in the pool knows the mathematical function that converts an input number to an output number, and the goal is to identify the magic input number that, when fed into the algorithm, returns "747." Remember that these are one-way functions, which means that it's simple to convert an input into the corresponding output number, but nearly impossible to reverse the process.

That's why they can't simply reverse engineer and "solve" by going backwards from 747. Instead, they'll have to resort to brute force trial-and-error, sampling numbers in the range of 1, 2, 3,..., 999, 1000 until someone gets lucky and finds the number that "maps" onto 747 when it's entered into the function.

When the miners join the pool, they will be

assigned subsets of the potential numbers, ensuring that someone in the pool tries the proper number as quickly as possible. If there are ten miners in the pool, the first one may be assigned the responsibility of attempting the numbers 1–100, the second 101–200, and so on, until the tenth member of the pool is allocated 901–1,000. Remember that, while everyone understands the goal is to "land" on the 747, no one knows which input number will bring them there. The

Nobody knows which input numbers will end up close to 747 since there is no predictable pattern in how a given input number maps onto an output number with the scrambler function. If Jake is the second person in the mining pool, he begins by grinding through 101, 102, and 103, yielding 851, 282, and 360 outputs, respectively.

Before running the numbers, neither Jake nor anyone else had any notion that 101 would map to 851, and even after going through his first three allotted input numbers, Jake has no

choice but to keep going through his list and hoping for the best. With each guess, he won't be able to "learn more about the scrambler function."

As Jake's machine slogs through the computations of running 104 through the scrambler function, another member of the group—call let's her Alice—announces that she's found the solution! Alice was the eighth person in the pool, and she'd tried 901, 902, and 903 but had failed. However, when she entered 904 into her computer and ran the calculations, the result was 747, which was the desired result. As a result, the group as a whole can stop operating, and the ten members can share the 25 bitcoins that the Bitcoin protocol has granted them.

Consider the mining pool's problem: how can they be sure Jake contributed 100 guesses ("hashes") without having to re-check the results he turned in, which would negate the pool's purpose?

Remember that even when the inputs are confined to specific groups, the hashing results scatter evenly. So long as we allow "wraparound," where 999 counts as "two away" from 1 and so on, we can find out the number n of a block of numbers where, no matter how we choose those n numbers, 10% of them will map to within a desirable range of the target number. (Remember that there are 1,000 possible output values in this case, so 10% of guesses will be in the 100-199 range, 10% in the 200-299 range, and so on.)

As a result, the members' main connection with the organizer is to record these "near misses." The persons in charge of our hypothetical pool, for example, could instruct members to record all instances in which they land within ten units of the target number of 747. In other words, a pool member would not only say "bingo!" when they struck 747, but he or she would also report any time they found a number that mapped to any number between 737 and 757. For instance, if Jake tries 104 and it maps to 751, he will submit

"104" to the pool's management, even if it was not a winner. They could verify that 104 did, in fact, correspond to the intended number within 10 units.

Remember, the goal of reporting these "near misses" is to ensure that every member of the pool is actively participating in the team effort by crunching data. The more "near hits" Jake can record, the more searching he must have done; Jake has no way of knowing how to tune his searches to get close 747 ahead of time.

The number of near-misses will be precisely proportionate to the number of guesses they make, providing a clear indication of the participants' relative contributions when determining how much of the solution prize to award them.

For example, assume Jake has reported 8 near hits while another team member, Charley, has only reported 2. By the time someone on the team really finds the solution—the number that maps into 747—suppose Jake has

reported 8 near hits while another team member, Charley, has only reported 2. Jake would subsequently receive a portion of the 25 bitcoins that was four times greater than Charley's, presumably because Jake's computer checked four times as many numbers during the search time as Charley's.

To be explicit, we only assumed a range of 10 units from the target for our example, a "near hit" range that works out to 1% of the original domain. Tweaking that "nearness" level has a tradeoff: the broader the net, the more accurate the payment distribution, with mining pool members being rewarded more closely to the actual contribution they made. The drawback is that the pool's administrators must check the near-misses to ensure that the participants aren't simply lying. This consumes valuable processing resources, as the management performs computations that will not result in any bitcoins.

In the abstract, it's not clear where the best position on this spectrum is, especially when

dealing with members that have dramatically diverse computational abilities and where some of the pool members may be dishonest. On the one hand, there may be a very narrow window of “nearness,” in which pool members only reveal the actual winning solution—a range of 0 if you will. There would be no "drag" on the pool's processing capacity because no checking would be required, but it would mean that all of the members would split the 25 bitcoins equally because there would be no way of knowing how many guesses each member had made until one of them discovered the winner.

On the other hand, management could require pool participants to record a near-miss within 499 yards of the goal. However, this would compel them to submit each and every assumption. After the fact, if management went through and double-checked every single estimate claimed by every member of the pool, they would be positive of each member's relative contributions (because management would have double-checked

every single guess claimed by every member). However, if management had to dedicate its own computers to replicating all of the calculations that the pool's members had accomplished, it would obviously defeat the point of the pool.

Is it Possible to Steal the Solution?

Another concern for people considering joining a mining pool is that one of the members might discover the answer and, rather than handing it on to the pool owner for sharing, take it and keep it all for themselves. Fortunately, pools have a mechanism of preventing this as well: members discover a solution (or "nonce") for a hash of a transaction bundle, but not the substance of that transaction bundle. As a result, they lack the crucial information to redeem any solutions they come across.

The pool leader, on the other hand, could refuse to pay out after discovering a victory, thus they rely on reputation to correctly

distribute the prize. Fortunately, the members may confirm that a) the rate at which they gain credits (near hits) corresponds to their rate of guessing, and b) their part of the reward is reasonable given the number of credits they contributed and the number of "near hits" required to solve the problem.

For two reasons, we've spent so much time talking about mining pools: First and foremost, it aids in the understanding of Bitcoin's overall operation, which is the primary goal of this tutorial. Second, one of the more ingenious counter-arguments to Bitcoin involves "scale economies" in mining pools. We'll try to solve this problem later, but our task will be lot easier now that we've gone through the basics of mining pools in detail.

EXCHANGES FOR BITCOIN

There are sites that facilitate trades between bitcoins and conventional currencies, much as there are sites that facilitate exchanges between buyers and sellers on eBay and international exchanges on foreign exchanges. The owner of a typical Bitcoin exchange will assume "physical" control of both Bitcoins and traditional currencies (from the perspective of the Bitcoin network, an address held by the owner is also the owner of the bitcoins).

When bitcoins are traded on such an exchange, it is not the same as when bitcoins are transferred within the same network. The exchange doesn't have to issue and broadcast

any signed messages, and the transfer doesn't have to appear in any ledger update; it's strictly an internal accounting problem. They must only follow the standard Bitcoin protocol when it comes to moving the bitcoins out of the exchange in order to keep the guarantee.

Consider Alice depositing $100 in physical cash into her CitiBank checking account as an example of paper currency. CitiBank takes actual possession of the green pieces of paper and records that Alice has a second account with them.

She has $100 in her bank account. Alice can look up this number on the internet or at an ATM. There is no physical movement of currency if Alice sends a check to Billy, who is also a CitiBank customer. No, CitiBank keeps the money in its vaults, but it simply adjusts its records to deduct $100 from Alice's account and add $100 to Billy's. Of fact, if Billy wants to take money out of his CitiBank account, the bank must relinquish

physical custody while deducting the amount from Billy's account.

Bitcoin exchanges go through the same procedure. When Alice deposits a bitcoin with the exchange, she formally transfers control of the bitcoin to an address controlled by the exchange; the Bitcoin public ledger now views the exchange as the owner of that bitcoin, with the authority to decide whether it will be spent (transferred to someone else) in the future.

When Alice does this, the exchange will utilize internal bookkeeping to record the fact that Alice has deposited one bitcoin with it (assuming it is honest). If she instructs the exchange to transfer the bitcoin to Billy (maybe because he sold her a desk), the exchange can keep possession of the bitcoin in the Bitcoin ledger as long as Billy is a client; it simply deducts 1 BTC from Alice's balance and adds it to Billy's. However, if someone wishes to remove bitcoins from the exchange, they must do so by sending the

relevant instructions to the Bitcoin network, which will update the ledger accordingly.

Processors of payments

Whatever the virtues of the Bitcoin network are, it must survive in a world where it is not universally accepted or used. However, if its proponents want to improve its adoption rate, users must be able to spend it in a growing number of locations. Payment processors' job is to convert Bitcoin to traditional currencies in a transparent manner so that the client can spend bitcoins while the merchant thinks he's getting paid in a more traditional currency (such as the dollar or euro).

Specifically, behind the scenes, the payment processor receives bitcoins from the client while simultaneously delivering the necessary currency to the merchant, based on the current exchange rate at the time of sale (with a built-in margin so that the processor can make a charge on the transaction). The

payment processor has access to a market (perhaps a large Bitcoin exchange) where it can sell bitcoins for the target currency as needed to keep its various currency holdings in order to facilitate transactions.

Although the service may appear to be complicated, it is comparable to what many credit card companies do when their customers travel abroad and use their credit card to purchase items in foreign currencies. Both the buyer and the seller see a transaction in their own currency (sometimes with a fee) based on the market exchange rate at the time of the sale, while the issuer converts discreetly without any further effort on either party's side.

Pools that are mixed

While Bitcoin has the potential for anonymity, it does so at the cost of a certain level of effort. Because all transactions are public, maintaining anonymity necessitates constantly generating fresh addresses to

which to direct incoming payments, ensuring that there is no unique link between the original holder and the recipient. This necessitates user cooperation in order for coins to be sent to new addresses that conceal their origins. If you just used the same address for every transaction, your complete history would be exposed as soon as someone could link you to any of them— for example, by selling you something and asking for bitcoins in exchange. 30

30 For this reason, merchants are urged to generate a unique address for each transaction: https://en.bitcoin.it/w/index.php?title=Merchant Howto&oldid=52425#Common_ Errors https://en.bitcoin.it/w/index.php?title=Merchant Howto&oldid=52425#Common_ Errors

Users can create as many addresses as they want and move their money around at will, as previously said, but it adds a substantial layer of privacy to ensure that their transactions

don't simply lead to the same individual who generated these addresses. In a mixing pool, a user joins forces with others so that the original bitcoins are distributed across many people, not just addresses. As previously stated, the money would end up at new addresses, but the majority of it would have "came from" other users. Instead of paying out to 5 addresses, the user may pay out to 95, while collecting money at 5 addresses that “really” originated from other people.

Even if a motivated investigator discovered a transaction path connecting a known transfer back to the person under investigation, it would be of low evidential value because the person under investigation would be one of many people through whom the bitcoins went.

An analogue to the use of currency can be made here. According to a study, 90% of dollar currency notes in the United States contain trace levels of cocaine. 31 However, possession of such cash is weak proof, or

inadmissible as such, for the same reason that everyone, not only drug users and dealers, carries such notes. Mixing pools do the same thing: they make it such that one person's bitcoins are well-mixed into other addresses, allowing an investigation target to honestly reply, "Yes, there is a chain of transactions connecting one of my known addresses and that one you mention... But you could say the same thing about 90% of the network!”

Messages that are embedded

Arbitrary messages unrelated to Bitcoin transactions can be appended to a transaction using the protocol. While this may appear to be a pointless diversion, it is actually beneficial.

31 Visit http://www.acs.org/content/acs/en/pressroom/ for more information. -study-up-to-90--percent-of-us-paper-money-contains-traces--

of-cocaine.html inherits all of the timestamp properties of the transfers in the actual blockchain, which creates an un-forgeable, chronological event record. That is, it verifies that the message was seen by everyone on the network within a short period of time, thus timestamping it. In fact, a developer created a program to incorporate messages that "piggybacks" on the existing Bitcoin network. 32 And Namecoin, a variation of the Bitcoin protocol, is already being used to record transfers of Internet domain names in a way that is more resistant to fraud than traditional methods of authentication;33 The same basic concept might be applied to different types of property.

Smart contracts and scripting

The protocol allows for a small amount of automation, allowing you to "trigger" specific actions to occur at a later time, subject to the agreement of other parties. Escrow services are a classic example: normally, you need a third party to hold money until the parties

agree on who gets to retain it all. However, you may use scripting to have the network follow the rule that "in two weeks, the cash flow to either party A or B, as selected by party C," without allowing any one party to have physical custody of the funds, avoiding the possibility of someone stealing it.

32 See http://news.techworld.com/security/3449015/ for more information. could-the-bitcoin--network-be-used-as-an-ultrasafe-notary--service/

33 See http://namecoin.info/ for more information.

BITCOIN'S PROMISING FUTURE

The concerns with state-issued currencies were discussed in Chapter II. Because Bitcoin is a private currency, broad adoption would alleviate all of the negative consequences of the government's monopoly on money. First and foremost, the threat of inflation would be forever extinguished—households and companies would be able to make long-term plans with far more confidence in the currency's market worth.

In this regard, Bitcoin outperforms even traditional commodity currencies like gold and silver. Although precious metals have a

considerably more consistent growth rate than state-issued fiat currencies, they can also “inflate,” and with less predictability than Bitcoin, which has an internal feedback mechanism that adjusts the difficulty of mining on a regular basis. Although it is a bit fantastical, we remark that “hyperinflation” with gold and silver is feasible if (say) humans locate a vast new resource (maybe in an asteroid belt) or if scientists one day figure out how to make gold and silver cheaply in the lab out of other elements.

Bitcoin, on the other hand, is the pinnacle of "hard" money, despite its intangibility. Its scarcity is mathematically entrenched in its protocol, not owing to empirical likelihood (as is true for gold and any other commodity money). Bitcoin's supply will always be limited to (just under) 21 million units.

Bitcoin has another significant edge over traditional commodity currencies. To fully comprehend this benefit, we must first explain a simplification that we've used

throughout the tutorial. In a strict sense, broad acceptance of Bitcoin would result in zero inflation of the base money stock after all 21 million bitcoins have been produced and distributed.

Even in this scenario, if commercial banks accepted bitcoin deposits and gave customers checking accounts backed only by fractional reserves, the commercial banks could expand and contract the broader quantity of "bitcoins in the economy" as measured by everyone's checking account balances by making and calling in loans.

This is analogous to today's situation, in which the amount of "publicly held U.S. dollars" exceeds the amount of paper currency in circulation, because $10,000 in paper currency in a commercial bank's vault could "back up" $100,000 in total customer checking account balances, as represented by digits in the bank's computer.

So, even if the commercial banking system

operates on a "fractional reserve" basis and (for whatever reason), the banks periodically engage in wide swings in the amount of loans they pyramid on top of their customer deposits of base money, we can see that even a hard base money does not necessarily translate into stable money as held by the public. Another advantage of Bitcoin is that it can be used in this situation.

Because Bitcoin is both a currency and a payment system, a society using it as its currency would be less reliant on huge banking organizations. 34 Maintaining a "Bitcoin wallet" is essentially the same as setting up an online bank account (with 100 percent reserves).

It's worth noting that as more retailers and employees started accepting Bitcoin, the demand for "Bitcoin exchanges" dwindled. Even if the world used just Bitcoin as money, commercial banks and other "middlemen" institutions would still exist, but banks' ability to inflate the currency would be considerably

limited, even when contrasted to a world where everyone used gold as money.

Beyond monetary stability, eliminating monetary inflation would also eliminate the business cycle as we know it, because credit markets would no longer be whipped around by central bankers' whims. Furthermore, by removing politicians' control over the printing press, states would be forced to fund their wars and welfare programs through explicit taxation or borrowing from private lenders.

34 Indeed, Satoshi Nakamoto's purpose for creating Bitcoin was to eliminate the fees that "middlemen" firms might collect for money transfers.

This would show the full cost of these spending, resulting in a world that is more productive and peaceful.

It's also worth noting that broad Bitcoin adoption will dramatically improve financial privacy for the typical person. Make no

mistake: if the government decides to go for a specific person on its hit list, Bitcoin will not shield him. With a significant budget and plenty of spare time, state investigators can finally locate a weak link and link a Bitcoin address to a real person in the target's human network, allowing them to untangle the Bitcoin transactions.

However, while Bitcoin will not allow members of ISIS, for example, to operate in perfect anonymity, it will make it much easier for the normal person to conceal his financial activity. Because Bitcoin lacks the centralized "choke points" that other digital payment methods, such as credit cards, PayPal, or e--gold, do, he'll be able to make payments to unpopular causes like Wikileaks.

When it comes to poor regions of the world that aren't supported by sophisticated financial institutions, Bitcoin's benefits are most clear. If the globe shifts toward Bitcoin, African entrepreneurs will have a lot easier time connecting with venture capitalists in

Europe. Furthermore, governments would find it difficult to restrict "profit repatriation" when all a local business owner needs is an Internet connection to send portion of his or her revenues back to overseas investors.

Consider how Bitcoin can transform escrow services as a final thought in our brief summary of Bitcoin's potential. Financial transactions have long been fraught with the risk of someone fleeing with the money, prompting increased government monitoring and record-keeping regulations.

Even today, when most money isn't physically present, a fiduciary can embezzle funds by abusing his access rights. As a result, governments have imposed stringent rules for acting as an escrow, frequently including the revelation of personal information and the placement of substantial sums in a trust. As a result, finding someone who can handle an escrow arrangement becomes more difficult.

Transactions can be encoded in the Bitcoin protocol such that the escrow provider can't break the trust: "smart contracts," written in the protocol's scripting language, ensure that bitcoins only go to certain parties depending on established conditions. As a result, all people need to do is a) trust the escrow agent to make the proper choice in a dispute, and b) create a "fallback" condition in case the escrow agent does not make a judgment.

Because you don't have to actually hand anyone the money, anyone can now provide the service without having to set up a PayPal-scale financial network or obtain the certifications and capitalization that are now required.

TYPICAL BITCOIN CRITICISMS

“The Bitcoin network wastes a tremendous amount of energy.”

Critics sometimes refer to the massive amounts of energy spent on bitcoin mining server farms, as well as the huge "arms race" in which miners must invest ever-greater resources to generate the same coins.

The dynamics, however, are not dissimilar to those of genuine gold mines, in which more resources must be expended to dig up the next unit of gold when the easier findings are depleted. When comparing Bitcoin to gold,

Bitcoin's Keynesian critics realize this. 35

Far from being pure waste, the "race" amongst miners to find solutions the fastest is an artifact of it being a trustless protocol, in which finding a solution must imply that a large portion of the network's overall computer power was spent on it. This necessitates a higher total investment in faster hash calculations, which in turn necessitates a higher number of hashes per mined bitcoin, similar to how gold takes a higher investment per ounce to mine over time.

The Bitcoin network is far from unique in that it is forced to spend due to a lack of confidence. For example, we might all be better off if we all stopped stealing from our neighbors since we wouldn't have to invest in locks and security systems. However, resources expended to maintain these boundaries are not wasted as long as we do not live in a world where individuals are painstakingly honest. And that isn't going to change as long as states take use of their

monetary power.

35 See, for example, Paul Krugman's 2013 article "Bits and Barbarism," in which he calls using a system that demands a computational proof of effort instead of trusting a single person to determine the transaction ledger a waste.

"How does disclosing every transaction to the world increase privacy?"

Unlike traditional banking, Bitcoin has a different “privacy model.” Counterparties and intermediaries (i.e., the financial institutions that process the transaction and any workers who may require access to the record) are usually informed of your relationship to an account number, and they preserve the transaction record on a "need to know" basis. Bitcoin works in the opposite direction: the transaction record is public, but your account connection is (optionally) kept secret. 36

Both models have advantages, but it's crucial to know what Bitcoin has to offer in this case. With Bitcoin, it's feasible to keep the "meaning" of a transaction hidden from everyone but the two persons involved (to the extent that it's linked to people's identities). Traditional banking, on the other hand, necessitates that these third parties be able to locate the true owner of an account and “connect the dots” as to who transferred what to whom. Even respectable, privacy--conscious banks, which preserve this information on a need-toknow basis (for example, by limiting account numbers to account numbers without names), must entrust it to others.

It should be noted, however, that concealing one's link to a Bitcoin address necessitates further effort. Any recipient of your transfers will be able to discover what other addresses have been associated with the one who sent them the money simply by using Bitcoin. However, for those prepared to go through the extra procedures of mixing pools (see

previous part), it can provide additional seclusion.

"You're telling me that the developers can change how it works, but that they won't later decide to make it inflationary?"

Bitcoin's protocol and codebase must strike a balance between competing interests. On the one hand, one of its main selling points is that the rules are "set in code," meaning that an ambitious "central banker want tobe" won't be able to change them later because of a trendy new economic theory that somehow justifies increasing everyone's wealth. Bugs and oversights, on the other hand, are unavoidable, as everyone who manages a major software project knows, and it is vital to make periodic upgrades to prepare for them.

A Look Back at Private Standards

Bitcoin can be viewed as a "private standard," similar to basketball rules or English

grammar rules. They have no legal power, but they stay consistent and stable because people must follow them in order to profit from engaging with a broader network of users. The fact that making large modifications to one's English usage "breaks compatibility" with the rest of the English-speaking community is what keeps people from doing so. In general, they will face all of the challenges associated with misunderstanding with the rest of the world (“wait, you've switched the meanings of ‘cat' and ‘dog?'”), while their alterations will be ignored.

For similar reasons, even purported “authorities” in these fields (dictionary editors, authors of English grammar books, sports referees, and so on) are limited to codifying what is already common practice and do not attempt to make significant changes to the standard on their own—at least not without significant input from the user base. In general, the bigger the change, the more likely it is that the user base will

reject it in practice. Even if you originally believe that a word implies "whatever the dictionary says," this is not the case. It wouldn't change the definition if the most recent version of the Oxford English Dictionary stated that "up" meant "going toward the bottom." People would simply say, "The new OED is incorrect."

English definitions, on the other hand, are not set in stone. Take a look at the language in a Shakespeare play or the King James Bible to see how the English language changes over time. As a result, standards change only when the benefits of the new standard outweigh the risk of "broken compatibility."

A "fork" occurs when distinct subgroups of a community recognize a different history as valid—for example, different spellings of words are accepted in England and the United States, or various sports leagues follow different regulations (such as allowing a designated hitter in baseball). This can also happen in the Bitcoin network, in which case

the two subsets recognize different owners of the same coins as of a certain moment, resulting in more divergent and isolated ledgers.

The Unintentional Bitcoin Fork on March 11, 2013 is a case study.

It can be instructive to consider an instance when a code update was required quickly. Though the technical details are complicated,37 the gist of it was that on March 11th, a new version of the code was issued that periodically counted different transactions as valid when compared to a previous version. This resulted in an unintended split, in which different traders believed separate ledgers were valid, resulting in disagreements about account balances and which alleged solutions to accept or reject, as they would constitute proofs of work for (what the other branch considered) invalid transactions.

Within hours of becoming aware of the issue,

core developers published an emergency notice encouraging users to roll back to an earlier version of the code.

37 Bitcoin Magazine has a comprehensive account available at: http://bitcoinmagazine.com/3668/bitcoin -- network-shaken-by-blockchain-fork, which (sadly for some) resulted in their block rewards being voided on the “losing” branch of the fork, but otherwise reconciled accounts.

While this isn't technically inflation, it could reflect some hard money advocates' concerns about Bitcoin: if a few bigwigs can agree to nullify someone's holdings, why can't they also debase others by issuing more? However, keep in mind the conditions that compelled this solution: the alternative was to divide the network, limiting new bitcoins to one "side" of the fork. And any option they chose would have nullified the work of one branch's past few hours. To get everyone on board with the same solution, there had to be

a pre-existing community agreement that one branch was more significant than the other, but not both.

This core group of developers, like dictionaries or official sports regulations, was only able to sway the community toward one side or the other on a specific issue of contention, not change their thoughts about vital qualities the crypto-currency should have. To return to the dictionary analogy, people often hail the inclusion of a new word —such as blog—as definitive proof that it's a "real word," but a word only gets into a new edition of a dictionary because the community has already been using it, and everyone understands that its inclusion is a judgmental call. If the editors of a respected dictionary added a really absurd word like grungerdut or removed a word like dog, that dictionary's credibility would be questioned. English folks would not start using grungerdut or stop using dog all of a sudden.

To summarize, adding inflationary qualities

to the basic Bitcoin protocol, while theoretically conceivable, would be analogous to English users in the future deciding they don't want to use verbs, or chess players introducing a new piece (say, the cannon). People who are gradually introduced to the Bitcoin network quickly discover that the protocol's cap on the total number of bitcoins is an essential feature of the protocol; failing to adhere to this aspect would render the network's definition of Bitcoin invalid.

"Bitcoin isn't a form of currency like dollars or euros. People do not think in terms of bitcoins; instead, they think in terms of government currencies."

As of this writing, this issue is probably valid for the majority of Bitcoin users (in late 2014). Even those willing to accept Bitcoin in transactions will frequently depend the number of bitcoins they will accept on the current exchange rate with another currency (such as the US dollar) at the time of the

transaction.

However, this finding does not prove anything on its own. If Bitcoin (or some other superior crypto-currency that has yet to emerge) were to ever become a viable alternative to the world's fiat currencies, it would have to happen gradually as the network of acceptance grew. We would first see a small but growing network of people using Bitcoin as a medium of exchange before we could see a big network of people using Bitcoin as their true money.

Economists use the term "medium of exchange" to describe a good that is accepted in a trade even if the recipient has no direct need for it. Rather, the person accepts the medium of exchange with the purpose of later using it to purchase something else. Thus, the good serves as a "bridge" between the initial act of selling and the subsequent act of buying; these ultimate transactions pass "through" the medium of exchange, much like sound waves pass "through" the medium

of air or a telephone line passes a message from one person to another.

Without a doubt, Bitcoin has already established itself as a means of exchange. To put it another way, there are people on Earth right now, as you read these words, selling valuable goods and services in return for bitcoins. Additionally, these sellers are not doing it because they intend to consume the bitcoins or use them to cut down a tree—obviously.

But there's more: many of the people who are already accepting bitcoins in deals intend to utilize them to purchase other products and services, rather than simply holding them for speculative purposes because they believe Bitcoin is a "good investment" right now. Whether the analyst thinks these people are intelligent or stupid, the fact remains that they are selling items in exchange for bitcoins with the purpose of utilizing those bitcoins to acquire goods from other people in the future.

These actions do not constitute "investing in"

or "speculating in" Bitcoin; rather, they represent the definition of using anything as a "medium of exchange" in the sense that economists use the term.

So, what qualifies anything as a monetary item? (And we're not talking about legality here; we're talking about economics.) That, on the other hand, is a more difficult obstacle to overcome. A money, in the sense that we use these terms,38 is a unique type of medium of trade, one that is accepted by almost everyone in the community.

We can claim that every money is a medium of commerce, but not every medium of exchange is money, just as every poodle is a dog, but not every dog is a poodle. The dollar, for example, qualifies as money in the United States because most Americans are prepared to take U.S. dollars in exchange when they are selling something, according to economists.

The process is self-reinforcing: if 95 percent

of the community accepts dollars in deals, the other 5% will most likely follow suit since they know they will have no trouble getting what they want if they enter the marketplace with dollars in hand.

38 Ludwig von Mises, a giant in the Austrian school of economics, provided the nomenclature and framework for monetary economics. We're taking our time to define the difference between a medium of exchange and money since it's critical to overcoming a subsequent argument to Mises' "regression theorem." Mises' famous work The Theory of Money and Credit is available for free online at http://mises.org/library/theory-money--and-credit for the most sophisticated explanation of these topics. However, because it is a difficult book, novices should reference Murphy's study guide: http://mises.org/library/study-guide-theory--money-and-credit.

The road to money-hood for Bitcoin, which is emerging as a new currency with no ties to

pre-existing monies and their established networks (the way the euro, for example, came in with an official link to the original European currencies such as the franc, mark, and so on), will undoubtedly be gradual. Bitcoin would begin as a means of exchange, with a growing community of people prepared to accept it. Since the first genuinely economic Bitcoin transactions in 2009, we've watched this process evolve right in front of our eyes. 39

So, when will Bitcoin become a legitimate medium of exchange? Because Bitcoin's simplicity of payment facilitates transactions all over the world, adopting the traditional economic definition is a little hard. For example, if 10,000 Earthlings agree to take Bitcoin first as payment and only accept other currencies as a backup, it may appear like we've found a community where Bitcoin is the currency. However, the dilemma is that these people could be dispersed throughout the globe, unable to communicate with one another.

We suggest a simple test to avoid this type of ambiguity: When a group of individuals can go about their everyday lives without having to exchange it for other currencies, it qualifies as the money they use. So, if people can earn their salary in bitcoins and then pay their groceries, rent, power, and transportation bills with bitcoins, we can definitely state that Bitcoin is the money for that group of people, no matter how large or little.

We are not forecasting that Bitcoin will become money in this manner in this guide—at least not anytime soon—but it is vital to convey our thinking on the subject. We want readers to have a basic understanding of what it might imply for them.

39 Peter Urda's (2014) "The origin, classification, and utility of Bitcoin" is a great examination of Bitcoin's origins, particularly as it relates to monetary economics issues—though we do not necessarily endorse all of the author's conclusions. <https://en.bitcoin.it/wiki/History/Bitcoin

Transactions History/Bitcoin Transactions History/Bitcoin Transactions History/Bitcoin> Transactions

Bitcoin must evolve from a means of exchange to a genuine medium of exchange, based on individual economic activity rather than official government decrees.

“Bitcoin is nothing more than a gigantic bubble or Ponzi scheme! The only reason someone would take it is because he believes he can resell it to the next sucker."

The irony of this argument is that it holds true for whatever amount of money (or medium of exchange, for that matter). For a time, forget about Bitcoin and consider traditional government fiat currencies. Why would an adolescent be willing to cut his neighbor's lawn for $20, for example? It's because he has a rough sense of what he'll be able to buy with that $20 in the marketplace, and he values those products more than the time he gives up to mow the grass. In other words,

the "sole reason" the adolescent accepts it is because

He expects to pass the $20 note he received from his neighbor on to someone else.

Even commodity money follows this pattern. For example, if someone sold a horse for a given amount of gold in 1830, it was almost definitely because they intended to spend the money on something else rather than (say) making it into a necklace and wearing it as new jewelry. When economists describe gold as money, people's willingness to accept it in trade is directly influenced by their expectations for its purchase power in the (near) future. In a nutshell, people in the 1800s were willing to accept gold as payment because they believed they could persuade others to accept gold as payment as well.

To be clear, the exchange value of a commodity money like gold has a “floor” based on its immediate uses. To put it another way, as long as people wear gold jewelry or

use it for dental fillings, anyone accepting gold as payment will never have to worry about its market value plummeting to zero. However, many people around the world are currently holding gold for investment purposes.

If it's for "monetary" reasons, then it's in a "bubble," as opponents refer to Bitcoin. The desire for gold "as money" (or medium of exchange, if we're being purists) drives up the market price of gold in comparison to other products. That means that according to Bitcoin opponents, a portion of gold's present market value is attributable to it being a "Ponzi scheme." In this regard, the only difference between the "gold bubble" and Bitcoin is that the former has a floor price above zero, whilst the latter has a floor price of zero.

However, it would be little consolation to a gold investor if his investment lost (say) 90% of its market value shortly after purchase; he would still regret purchasing at the pinnacle

of a bubble.

We recognize that these views will elicit strong reactions in some quarters, particularly among hard-money devotees who admire the renowned Austrian economist Ludwig von Mises. So, to back up our statements, here's a quote from Mises himself, written in 1912 when gold was still the world's currency:

Many of the world's most eminent economists have assumed that the value of money and the material from which it is made is solely determined by its industrial employment, and that the purchasing power of today's metallic money, for example, and thus the possibility of its continued use as money, would vanish instantly if the monetary material's properties as a useful metal were destroyed by some accident or other.

This viewpoint is no longer tenable, not only because it fails to account for a slew of events, but also because it contradicts the fundamental laws of economic value theory.

To claim that the value of money is determined by the non-monetary use of its constituent materials is to ignore the fundamental issue. 40

40 Ludwig von Mises, The Theory of Money and Credit ([1912] 1953), pp. 103-104, http://mises.org/library/theory-money-and--credit. Murphy's study guide for this relatively challenging book may be found at http://mises.org/library/study-guide-theory--money-and-credit.

To summarize, the critics are correct in claiming that the only reason people would accept bitcoins as payment is because they hope to be able to offload them (at a specific price range) to other people down the road. That principle applies to all currencies, including government-issued paper money and historical commodity currencies like gold and silver. The “real problem” for economic theorists, as one of the pioneers in monetary theory Ludwig von Mises alluded to in the above passage, is to explain the value of

money without reference to its direct applications.

In short, Bitcoin has been "in a bubble" since it was first utilized in an economic transaction. However, gold has been "in a bubble" for thousands of years, ever since the first transaction in which someone received gold because he (or she) intended to trade it away in the future, and mainstream fiat currencies have been in a bubble since their inceptions. If the Bitcoin opponents want to use the term "bubble" in that way, fine, but these are bubbles that can endure thousands of years and include the exact currencies that the critics use on a daily basis.

"Bitcoin isn't a physical asset like gold or silver. It doesn't have any essential worth."

This type of argument usually contains a lot of information from the critics. We'll touch on some of the related difficulties in the other objections we'll be dealing with in this part. For the time being, however, we can readily

dismiss the "no inherent worth" claim: There is no such thing as inherent value in modern economic theory.

Since the early 1870s, when the so-called Marginal Revolution occurred, economists have abandoned the classical method of thinking and adopted subjective value theory. This explains market prices in terms of people's mental judgements when going into the market In the end, the reason goods are priced the way they are is because people who buy them have subjective assessments.

People buy beer because it is a valuable commodity (even though others hate alcohol). Cigarettes are purchased because people appreciate them (even though others hate them). Bibles are purchased because people value them (even if atheists do not). Yes, there are physical aspects of these various goods that help explain why people subjectively value them, but the important point is that economists explain market prices in terms of subjective values; there is no such

thing as “intrinsic value” for an object. In modern (post-1871) economic theory, that kind of statement has no meaning.

“Bitcoin will never become money because it violates Ludwig von Mises' ‘regression theorem.'”

Because there is so much "inside baseball," most readers may safely ignore this issue. However, we've noticed that this reference to Mises' regression theorem is one of the most common arguments among libertarians—a group that would otherwise be quite favorable to Bitcoin.

To understand the (ostensible) difficulty, we must first review Mises' contributions to monetary theory.

41 As we said before in this article, economists introduced a new approach of explaining market prices in the early 1870s,

based on subjective worth and "marginal utility." Consumers subjectively valued steak more than hamburger meat, which is why a pound of steak (say) traded for more than a pound of hamburger meat. As a result,

41 Murphy's article "The Origins of Money and Its Value," available at http://mises.org/daily/1333, provides a more detailed explanation. Murphy's talk at the 2014 Texas Bitcoin Conference on the same topic—directly related to the Bitcoin controversy—can be found at https://www.youtube.com/watch?v=HVnCEWcdEQk.

Economists could explain "actual" exchange ratios between commodities, or what we may call "barter prices," using the marginal utility paradigm.

Of course, in the actual world, people don't barter; instead, they (usually) sell everything in exchange for money, which they then use to buy whatever they want. Economists

initially believed that applying the new, subjective value theory to money would be futile because they would be debating in circles. This is because the only reason people appreciate money in its position as money (rather than the industrial or ornamental applications it might serve if it were a commodity money like gold) is that they expect it to have purchasing power in the future.

As a result, it appeared that the cutting-edge "marginal utility" approach to understanding economic value didn't work for the specific commodity functioning as money, because you'd end up saying, "People value money because money has worth." Such an argument is scarcely compelling when presented in this light; it claims the precise thing economists are intended to explain.

With his so-called regression theorem, Mises solved this dilemma. To break out of the apparent circularity, he first included the time factor. People now are willing to accept

money in exchanges because they expect it to have a certain purchasing power tomorrow, according to a more exact application of the new, subjective marginal utility theory.

Furthermore, people build these expectations about the worth of money tomorrow based on the pricing of things (quoted in money) that they saw in the marketplace yesterday. As a result, Mises demonstrated that we are not reasoning in circles.

Instead, we're finally describing today's purchasing power of money—how much a person can buy with a unit of money—by recalling what money could sell for yesteryear. We're not debating in circles because the purchasing power, or exchange value, of money today differs from the purchasing power of money then.

However, critics may not be happy with Mises' rhetorical maneuvering thus far. Sure, he got over the explanation's circularity, but now he appears to be exposed to a counter-

argument accusation of “infinite regress.” In the end, Mises is attempting to explain today's value of money in terms of yesterday's worth of money.

And, please tell me, where did yesterday's money worth come from? So, it was worth two days ago, and so forth. So it appears that Mises hasn't addressed the problem; instead, he's only pushed it back a step.

This is where Mises shines, and why so many people regard him as a smart economist to this day. Mises emphasized that his reasoning was not based on an infinite regress. No, all he had to do was push back the chain until the first day that the commodity in question was held by someone as a medium of exchange—where the value of money on Day T was influenced by observations of its value on Day (T-1)—until the first day that the commodity in question was held by someone as a medium of exchange.

Prior to that tragic transaction, the

commodity (let's say gold) was a common good, traded in barter, and valued solely for its direct uses. Economists already knew how to use the new subjective value theory to explain barter prices, so the explanation could end there.

Mises had thus included the money commodity into the new framework of marginal utility theory, demonstrating that his forefathers had thrown up the towel too soon when they thought that money itself couldn't be handled by the new mental machinery.

Now that we've outlined the evolution of monetary theory in the hands of Mises and his Austrian disciples,42 We can see the (ostensible) difficulty with Bitcoin: If we use the regression theorem to trace the purchasing power of money today back to the point where the money commodity was bought and sold in a state of pure barter, it seems obvious that all monies must have their origins as regular commodities valued for their direct uses rather than as media of exchange.

Even government fiat paper currencies match this pattern, because they were all introduced with ties to the 42nd Amendment. We realize that anthropologist David Graeber recently disputed this classic economic explanation of money's origin. Although it is beyond the scope of this guide to address his concerns, interested readers should consult Robert P. Murphy's 2012 article, "Origin of the Specie," which can be found at: http://www.theamericanconservative.com/arti of-the-specie/commodity-of-the-- specie/commodity-of-the-specie/commodity-- of-the- It is true, for example, that presently the

The US dollar is nothing more than a piece of green paper with no practical function. However, the US dollar was historically redeemable in gold and/or silver, payable by US authorities, and so its purchasing power today can be traced back to the purchase power it "inherited" from gold and/or silver when they were legally linked.

So, where does Bitcoin stand after all of this? Many of Mises' supporters claim that Bitcoin can't become a money since it lacks the historical role of a mere (non-monetary) commodity, citing Mises' invention of the regression theorem. The (perceived) problem is that no one would know what bitcoins were worth in the market before they were appraised for use in exchange. Attempting to explain the market value of Bitcoin using the Misesian regression theorem would result in a brick wall; we would never be able to go back in time to the point when people first became interested in Bitcoin.

Our response to this objection is straightforward: It has been empirically debunked. If the Misesian regression theory is correct and a commodity requires a history as a "normal good," then any commodity becoming a medium of exchange will face a hurdle. As a medium of exchange transitions to a money, the critical threshold is not reached. And, since Bitcoin has already proven to be a medium of exchange, the

regression theorem should be irrelevant to its future evolution.

Because this is a nuanced point, let me express it from a different perspective. It is definitely true that Mises and some of his notable followers, most notably economist and libertarian thinker Murray Rothbard, argued in print that any money must have started out as a regular commodity in order for consumers to be able to compare its relative exchange value to other things. However, their theory can be applied to any medium of exchange (and in fact Mises and Rothbard say so, explicitly, in various passages).

In other words, the regression theorem's "problem" arises even if only one individual accepts an item in trade with the purpose of trading it away in the future. How is that individual meant to know if he's being taken advantage of unless he already has a concept of the item's market value? So, if a reader believes Mises demonstrated that any money

must have come from a regular commodity, that reader must likewise believe Mises demonstrated that any medium of exchange must have come from a regular commodity.

Various philosophers have now proposed theories for how Bitcoin circumvents the issue. Others have argued that people did value bitcoins directly (for example, as components of a global payment system, as financial assets that might rise in value, or as ideological weapons against the oppressive State); while others have argued that Bitcoin slipped through a loophole in the regression theorem, by having a very low initial exchange value that made the first recipients say, "Why not?" as they traded awry.

However, we believe that getting into the weeds of describing how Bitcoin was able to overcome the seeming hurdle posed by the regression theorem and become a medium of exchange is a rhetorical mistake. The key truth is that Bitcoin has become a means of exchange, and the regression theorem's logic

plainly does not exclude its adoption as a full-fledged currency. People can check up Bitcoin's purchasing power yesterday to generate expectations about its purchasing power tomorrow. Misesian monetary theory does not require today's market participants to have historical knowledge of money's ancient exchange value, as it did in the days of barter. No, Mises merely required the link to the days of barter to establish a logically complete theory. However, economists may debate how Bitcoin got off the ground until they're blue in the face, since the plain empirical truth is that Bitcoin did get off the ground.

People in the market have been transacting with Bitcoin for several years and counting.

We've already written a detailed response to this particular (and to some readers, no doubt arcane) Bitcoin criticism, but in the spirit of persuading the critics and educating all readers, let's try one more argument to dispel the "regression theorem" complaint. Even Mises and Rothbard, the acknowledged

experts of the regression theory, admit that gold could be utilized as a commodity money even if its direct applications ceased. We supplied a quote from Mises to that effect earlier, and now we'll give a quote from Rothbard to that effect:

The demand for an item as a medium of exchange must be based on a set of pricing for other goods that already exists. Only a commodity historically utilized directly in a barter setting, and thus having an array of prices in terms of other goods, can become a medium of exchange. Money must emerge from a commodity with previously established purchasing power, such as gold or silver. It cannot be formed out of thin air by a government decree or "social agreement."

On the other hand, this reasoning does not imply that if an existing money loses its immediate uses, it can no longer be utilized as money. As a result, if gold lost its value in ornaments or industrial purposes after it had been established as money, it would not

necessarily lose its identity as a money.

Money prices continue to be fixed once a medium of exchange has been established as a money. If gold loses its direct uses on day X, there will still be previously established money prices on day X – 1, and these prices constitute the basis for gold's marginal usefulness on day X. Similarly, the money prices determined on day X serve as the foundation for calculating money's marginal utility on day X + 1.

From X forward, gold might be sought only for its trading value, rather than for its immediate use. As a result, while it is definitely necessary for money to begin as a commodity with direct uses, it is not necessarily necessary for those uses to persist once the money has been created.

IT HAS BEEN DECIDED TO USE MONEY

We included Rothbard's sweeping assertions about the need for a commodity to originate with direct uses, even though it made the citation longer than necessary for our point, to convince our detractors that we're not hiding anything. Yes, Rothbard believed that money had to have started out as a common commodity. However, as the preceding sentence indicates, the onus is on the shift to a means of exchange.

Furthermore, Rothbard acknowledges that once a good has established itself with a history of market exchange values, the

regression theorem will apply from that point forward. So, replacing "gold" with "Bitcoin" in Rothbard's paradigm, we may say: As long as Bitcoin's purchasing power had been created and observed on day X-1, individuals would have no trouble valuing Bitcoin exclusively for its exchange value on day X and thereafter, even if Bitcoin served no direct purposes.

To wrap up this lengthy part, we'll make one final point to the critics: If you still believe Bitcoin is a "bubble ready to burst because it has no intrinsic worth," you must accept that Mises and Rothbard made blunder after blunder in the preceding passages. Both Mises and Rothbard agreed that gold could continue to operate as a viable currency even if it lost its direct applications.

According to your analysis of Bitcoin, Mises and Rothbard must be erroneous, because if gold loses its immediate uses, it, too, will be "in a pure bubble with no intrinsic value," and will crash to zero at any time. Of course,

Mises and Rothbard could have been wrong, but if you believe that, you should cease using their work in your Bitcoin criticism.

43 Murray Rothbard, Man, Economy, and State, With Power and Market (Scholar's Edition, 2nd edition, [1962] 2009), p. 275, available at: http://mises.org/document/1082/Man--Economy-and-State-with-Power-and-Market. Visit http://mises.org/library/study-guide--man-economy-and-state for Murphy's study guide.

Bitcoin has already established itself as a means of exchange. People can make predictions about its future purchasing power based on observations of its current market worth. We are not forecasting that Bitcoin will one day become a legitimate currency; rather, we are claiming that Ludwig von Mises' regression theorem has no relevance on the issue at this time.

Whether Bitcoin becomes money or remains

a medium of exchange indefinitely is a purely empirical matter that the regression theorem has no bearing on.

"Isn't deflationary currency bad for the economy?" you might wonder.

Some skeptics try to turn Bitcoin's evident advantage—the absolute limit of 21 million bitcoins—into a disadvantage. The Bitcoin protocol changes the block reward (how many bitcoins one can claim for finding a valid solution) over time, resulting in a constantly declining "harvest" of new bitcoins, with 99 percent of all bitcoins in people's ownership by 2030. 44 People refer to bitcoin as a "deflationary currency"45 because of the ultimate halt in fresh "production," and they are concerned that it will lose value.

44 See https://en.bitcoin.it/wiki/Controlled supply for forecasts of bitcoin growth through time.

45 Bitcoin is technically always rising in supply, thus calling it "deflationary" is a bit of a misnomer. However, unlike previous money (both commodity and paper currency), Bitcoin's supply will fall off as it approaches the hard limit of 21 million units. Because the quantity of "actual" goods and services is expected to expand at a low percentage rate year after year (i.e. exponentially), and because the number of individuals holding bitcoins is expected to grow, the bitcoin--prices of most products and services are expected to fall over time.

This is why it is referred to as a "deflationary" currency. It's worth noting that when the price of products and services measured in bitcoins falls, Bitcoin becomes more valuable—you'll need fewer bitcoins to buy a carton of milk or a new automobile. If, for example, the dollar-price of milk and vehicles continues to climb over time, the dollar-price of one bitcoin will rise extremely quickly, because the two will be added together.

If a substantial number of individuals used Bitcoin as their primary mode of payment, it would hinder economic progress.

These suspicions are unfounded, as both economic theory and historical facts demonstrate. The quantity of money is unrelated to "real" economic variables in the long run, according to monetary theory (such as the unemployment rate, or how many hours a person must work at his job to be able to buy a new car or a basket of groceries).

For example, if the total quantity of dollars doubled overnight—such that people who went to bed with $200 in their checking account woke up with $400, and so on—then the main consequence would be to double all incomes and prices in the long run. Sure, someone making $50,000 might (eventually) make $100,000 once things calmed down, but she wouldn't be any better off—everything at the shop would cost twice as much, too.

Most people can readily realize that doubling

the money supply would not make society any richer. However, once someone concedes that, the converse is also true: Cutting the money supply in half unexpectedly will not make society poorer, at least not until everything adjusts to the new condition. Someone making $50,000 in income would (eventually) see her wages drop to $25,000, but it wouldn't make life any more difficult for her—everything at the shop would be half as expensive, too.

True, we've been talking about the long run so far—the economist's ideal safe haven where nothing goes wrong. So, how about in the short term? A mortgage on a house, for example, is a fixed, contractual obligation expressed in dollars. That mortgage payment remains constant regardless of price inflation or deflation. So, during an adjustment period in reaction to fluctuations in the money supply, wouldn't these types of frictions cause severe hardship?

impacts (specifically, dropping bitcoin-priced items and rising dollar-priced products).

The answer is yes, and it's just another reason why Bitcoin is such a popular money. Changes in the quantity of money only cause short-term disruptions if they occur unexpectedly. Changes in the overall amount of bitcoins, on the other hand, can be forecast decades ahead of time, far more accurately than fiat currencies or even commodity currencies like gold and silver. If, for example, the bitcoin-price of a generic basket of consumer products declined (say) 5% each year from 2030 onwards, people writing long-term contracts quoted in bitcoins in 2028 would have anticipated this and changed the terms of the contract appropriately.

The idea that "deflation" (lower pricing for consumer products) is a bad thing that cripples the economy is a recent fiction. The public's anxiety stems from a misunderstanding of correlation and causation: In the past, economic disasters were frequently accompanied by declining consumer prices, as people panicked and

hoarded cash.

However, this does not imply that deflationary consumer prices result in economic depression. For example, the official Consumer Price Index (CPI) in the United States declined by 3.4 percent from January 1926 to January 1928. 46 Is the economy slow as a result of this modest price deflation? No, this occurred in the midst of the "Roaring Twenties," the boom period that preceded the Great Depression of the 1930s. Consumer prices did fall quicker in the early 1930s than in the mid-1920s, but it was a question of degree rather than kind.

More broadly, throughout the traditional gold standard period in the United States, there were long periods where consumer prices decreased gradually year after year, and yet such mild price deflation was consistent with significant economic expansion. When the production of goods and services outpaces the supply of money (such as the amount of gold people own), we would anticipate the

purchasing power of a unit of money to rise, as it becomes scarcer in relation to everything else.

46 http://research.stlouisfed.org/fred2/data/CPIA contains historical CPI data.

else. This development is not hazardous nor suffocating; it is simply the usual function of supply-and-demand at work. 47

When people see prices falling, they postpone purchases, according to one facile argument to "prove" consumer price deflation is negative. As a result, business sales plummet, employees are laid off, consumers fear and become even less willing to buy, and the economy spirals into oblivion.

However, that story can't possibly be true, at least in general. To begin with, there are historical examples (such as the mid-1920s) of consumer prices gradually falling amid a thriving economy. Try applying that narrative

to the computer sector in our present time. Wouldn't such logic "prove" that no one ever buys a new computer since he can find better options at lower prices if he waits six months? Despite the constant "deflation" in computer hardware, casual observation indicates that the industry hasn't been hurting.

There's nothing wrong with people holding money as a financial asset that appreciates in value (in terms of market purchasing power) over time. People see today's fiat currencies like hot potatoes because they perpetually devalue in comparison to products and services. Dollars, euros, and yen "burn a hole in your pocket" if you don't spend or invest them.

Those who own bitcoins, on the other hand, would not need to "put them to work" in other financial assets because the bitcoins would rise in value (in terms of overall purchasing power) over time. However, in order to avoid misunderstandings, we should clarify once

and for all.

47 To distinguish between dropping prices caused by a financial catastrophe and lowering prices generated by "real output" growing faster than the quantity of money, economists frequently use the words "bad deflation" and "good deflation." Obviously, depending on which of these scenarios we associate with the phrase, our perceptions of (price) deflation will differ. See George Selgin's debate from 1999, "A Plea for (Mild) Deflation," at http://www.cato.org/sites/cato.org/files/serials report/1999/5/cpr- 21n3.html.

Bitcoin's societal function is to serve as a currency (and low-cost payment method), as previously stated. Individual bitcoins increasing in "market value" over time would not make humanity wealthier. Rather, Bitcoin's "hard" limit on supply would make its purchasing power far more predictable than that of other conceivable currencies,

making it more ideal for long-term economic planning.

Before we wrap off this part, there's one more weakness in Bitcoin's armor to point out: Some individuals are concerned that the market value of bitcoins will eventually climb to the point that the average person will be unable to afford them. If one bitcoin can buy a new luxury car in 2050, won't only the wealthy own bitcoins, undermining the goal of aiming to achieve wider adoption?

This argument ignores the reality that individuals can hold fractions of bitcoins. Because the protocol allows the blockchain to divide ownership down to eight decimal places, the original protocol and supporting software can manage purchases as little as 0.00000001 BTC. As a result, rather than envisioning the globe becoming saturated with 21 million bitcoins, consider the possibility of humanity eventually owning 2.1 quadrillion units of bitcoin cash.

Merchants might quote things with a different unit of measurement (not "bitcoins") to represent fractional amounts of the currency, just as Americans use dollars but quote cheaper items in cents. For example, on a price tag, a merchant might simply write "45 mBTC" to show that the item cost 45 milli--bitcoins, or 45 one-thousandths of a bitcoin.

This can alternatively be written as "4.5 cBTC," which stands for four and a half centi-bitcoins. (It's worth noting that one millimeter equals one thousandth of a meter, and one centimeter equals one hundredth.) Furthermore, with user consensus, the protocol can be modified without causing any disruptions, allowing for even more divisibility. 48

48 The challenges involved in changing the protocol are discussed in "The extent of decentralization" above.

"With retail prices falling year after year, why would anyone invest in productive

operations?"

A more complex argument against Bitcoin's inevitable price deflation is that it will reduce the incentive for investors to invest in operations. After all, if retail prices are falling year after year, wouldn't it make more sense to stay "in cash" (i.e., bitcoins) and reap the "real" profits as those bitcoins gain in value?

This concern ignores the possibility that resource market prices may adjust to reflect the predicted future price of the retail goods they will generate, completely reflecting the required incentives to attract investors. A simple numerical example is the best way to demonstrate this concept:

Investors' current and (expected) future prices

In January 2015, I was thinking about starting a wine business.

January 2015 prices...

Prices in January 2016 (assumed)...

100 mBTC bunch of grapes

98 mBTC bunch of grapes

103 mBTC for a bottle of 1 year wine

101 mBTC for a bottle of 1 year wine

When comparing prices in bitcoins, we can see that there is a general price deflation in our hypothetical economy. In January 2015, a bunch of grapes (the amount needed to make a bottle of wine) cost 100 mBTC, but twelve months later, it will cost 98 mBTC, indicating that grapes have experienced a 2 percent price deflation.

Similarly, the price of a bottle of wine that has been aged one year drops from 103 mBTC in January 2015 to 101 mBTC a year later, indicating that wine has experienced 1.9 percent price deflation.

So, in our hypothetical economy, does this mean that investors would never acquire grapes in order to manufacture and sell future bottles of wine?

wine? Not in the least. As seen in the table above, in January 2015, an investor may pay 100 mBTC to purchase the grapes needed to make a new bottle of wine. (We're neglecting the labor, glass, cork, storage room, and other inputs for the sake of simplicity.) After a year, the bottle contains year-old wine, which may be sold for 101 mBTC on the market.

As a result, our investor receives a nominal return of 1% on his investment and a real return of around 3%, assuming that the bitcoin price of most products and services also declined by 2%. If the investor had merely stayed on the sidelines and held his bitcoins, his nominal return would have been 0%, while his true return would have been around 2%.

At this point, we can raise a more

sophisticated objection, namely, that with a “deflationary” currency, the market-clearing real return could theoretically fall low enough to cause the nominal interest rate to hit the “zero lower bound,” preventing the economy from reaching equilibrium. If the true rate of return in our simplified grape/wine example had to be only 1%, rather than the 3% mentioned in the table above, the only way to achieve that would be for the price of wine in 2016 to be lower than the price of grapes in 2015. But why would anyone invest 100 bitcoins in grapes in 2015 in order to make a bottle of wine that would sell for 99 bitcoins a year later? It is preferable to keep the 100 mBTC for a year in order to keep their nominal worth.

These talks frequently refer to the so-called "Fisher relation"49 (named after economist Irving Fisher), which states:

Real rate of interest + Expected rate of (price) inflation = nominal interest rate.

49 In case purists are interested, some economist historians will claim that the profession's notion of "the Fisher relation" is only tangentially related to Fisher's actual works on the subject. "Irving Fisher and the Fisher Relation: Setting the Record Straight," by Robert W. Dimand, was published in 1999.

If we assume positive inflation, the Fisher relation is most intuitive for modern readers who grew up in a world of state-issued fiat currencies. For example, if investors want a real return of 5% on their money and prices are expected to rise by 2%, they must be paid a nominal (or market) interest rate of 7% — five points to compensate them for deferring consumption for a year, plus two points to compensate them for the fact that the money they are being paid back in is weaker than the money they were paid in.

Now that we've returned to Bitcoin, we can utilize the Fisher relation to figure out what's going on. The fear is that the loan market will

hit a brick wall if the expected rate of price deflation is higher than the real rate of interest that balances the desires of borrowers and lenders.

Since the nominal interest rate can't go below 0% —because people would be better off just sitting on their bitcoins for a year—the worry is that the loan market will hit a brick wall if the expected rate of price deflation is higher than the real rate of interest that balances the desires of borrowers and For example, if consumer prices decline by 5% each year on average, real interest rates can only fall by 5%. 50 However, if the real rate of interest that would "clear" the loan market is (say) 3%, the economy would appear to be saddled with a two-point higher interest rate than it should be.

Some economists are concerned that in such a situation, the general public would prefer to save rather than invest, and that overall expenditure would be insufficient to provide full employment.

Of course, this article is intended to be an introduction to Bitcoin rather than a primer on economic theory.

51 Let us make two remarks in response to concerns about this for our purposes.

50 We may see that Real Interest Rate = Nominal Interest Rate + Price Deflation Rate by rearranging the Fisher connection. The real interest rate is always equal to or greater than the price deflation rate since the nominal interest rate cannot go below zero.

51 For a thorough examination of all of these concerns, read Robert P. Murphy's PhD dissertation, "Unanticipated Intertemporal Change in Theories of Interest," published in 2003. We should point out that the framework presented in the text above—in which interest is regarded of as a "real" phenomena with price inflation rates slapped on as an adjustment—is not at all how Murphy tackles the problem.

Situation type: First, we would anticipate the actual rate of interest to more than offset the pace of price deflation in a stable currency (such as Bitcoin once it reaches 21 million units). If all other factors were equal, the pace of price deflation would simply reflect the increase in output. Intuitively, with a fixed amount of 21 million bitcoins in the public's hands, an average annual rise of (say) 3% in output should result in consumer prices (quoted in BTC) falling roughly 3% per year. However, if consumers expect their real wages to increase by 3% per year, their desire to "smooth" spending over time will drive them to demand a similar premium for deferring consumption for a year. Furthermore, people have a "time preference," which means that even if their earnings remained stable over time, they would expect a premium due to a general dislike of deferred gratification. Of course, anything is conceivable in practice, but these factors suggest that a deflationary currency (such as Bitcoin) should not pose an issue in general when it comes to "high real interest rates." 52

Second, we note that historically, problems have arisen (according to Keynesian economists who think in these terms) when some external event—such as the collapse of an asset bubble—causes a sudden increase in the demand for money (fueling price deflation) as well as a drop in the market-clearing real rate of interest (as debt-strapped consumers pay down debt and terrified investors just want to hold on to their principal).

Nonetheless, we believe that these boom-bust cycles are the result of government interference in money and banking. After a financial crisis, a society that used Bitcoin as its primary currency would not experience these recurring troughs.

In the short and medium runs, the smooth and steady growth of "the long run" would also exist the main topic However, the treatment described above is conventional in the literature, and it is how Bitcoin supporters are most likely to respond to this point.

52 Charles Jones' 2009 discussion, available at http://web.stanford.edu/chadj/Consumption20 11-25.pdf, provides a formal analysis of these issues—as well as the assumptions under which we may be sure that the real interest rate is higher than the growth rate of consumption.

"Won't the government take action against Bitcoin?"

As this initial edition of the guide is being published, the United States, China, and other powerful governments are interfering in various ways with Bitcoin adoption. These developments will undoubtedly have a significant impact on the market value of bitcoins, and they may even determine if Bitcoin becomes a legitimate money rather than merely a financial asset and/or medium of exchange.

However, even the most harsh punishments enforced by central governments around the world, in our opinion, are unlikely to prevent

all persons on the planet from adopting Bitcoin (or a superior derivative). Crypto--currencies aren't going away anytime soon. States restricting Bitcoin would be similar to prohibiting alcohol in the face of tremendous demand.

It's important to remember that no one is in command of Bitcoin. Once someone comes online, the Bitcoin network can swiftly proliferate to hundreds of other machines if only one copy of the blockchain survives on their hard drive somewhere on Earth.

Even if governments around the world apprehended all present bitcoin owners and destroyed all knowledge of their private keys, the bitcoins mined up to that point would be gone forever. Nothing, however, would stop new users from joining the network in order to mine fresh blocks and earn the new bitcoins that were "into circulation." The previous bitcoins would still "exist" in the eyes of the network; it's only that their owners never used them for various reasons

(such as being executed or being imprisoned).

To reiterate, massive crackdowns could force the market price of bitcoins (priced in other State-issued currencies) to fall. As a result, people should think twice before accumulating a substantial bitcoin holding, and corporations should research the regulatory process before investing large sums in the hope of a new payment system.

However, the issue of "Will Bitcoin—or a derivative—be around in 100 years?" remains unanswered. We believe the answer is a resounding yes. Remember that despite the coercive drive to dethrone gold as the market's money, cocaine has withstood enormous government crackdowns and individuals all around the world still utilize gold as a tangible asset.

"Doesn't Mt. Gox show that Bitcoin is a fraud?"

For those unfamiliar with the Bitcoin ecosystem's history, it had its own Bernie Madoff. Mt. Gox (pronounced "mount gawks" and named after a prior business that dealt in cards for the game Magic: the Gathering) was for a time the largest exchange for exchanging bitcoins to dollars. It required you to hold your money and bitcoins in trust with them, just like traditional brokers and exchanges, with the assurance that you might withdraw them later.

However, it came out that Mt. Gox had been the subject of cyber-attacks and was unable to repay its commitments to users (much like an illiquid or insolvent financial institution that lacked proper insurance or lender of last resort). It instituted ever- Soon, a key component of the Bitcoin ecosystem failed, and users lost much or all of the funds they had entrusted to the exchange. It shook the Bitcoin community to its core.

Mt. Gox is neither the same as Bitcoin, nor is

it an essential component.

While this is a concerning development, it is important to distinguish between what failed and what did not. Because of a mix of digital signatures and a competitive proof-of-work mechanism, Bitcoin's key innovation is that it allows anyone to execute trades inside its network without needing to trust any single entity. There were no holes detected in either of these. An interface with the rest of the world, on the other hand, has failed.

State minting methods might be compared in this regard: their main security purpose for paper notes (such as dollars, yen, and so on) is to make them difficult to counterfeit. It would be unfair to blame mints for the time you were mugged, or the time burglars broke into your home, or the time you were duped into buying a thousand Beanie Babies: as long as you weren't robbed because of the ease with which counterfeit notes can be produced, the mints did their job (though other security measures clearly failed in those

cases!). Similarly, the Bitcoin protocol aims to prohibit the virtual version of counterfeiting; nevertheless, this solution does not address the classic issues of unethical scammers or physical incursion.

It should reassure us that all of these assaults are aimed at the Bitcoin protocol's external connections, rather than the system itself. Because all of the "weakest links" are located outside of Bitcoin, this is the case.

… However, prudence in emerging markets is not a bad thing.

That so, one should not be overly optimistic about what occurred. Mt. Go was "the" location to exchange bitcoins to dollars for a moment. The weakest link in a system determines its overall strength. Whatever powerful cryptography a financial service provider employs, it'll be for naught if its customers fail to follow basic security precautions, such as leaving credentials where others can find them, or if its website

keeps mistakenly handing over control of users' accounts to hackers. Furthermore, regardless of how counterfeit-proof the United States dollar is as a paper currency, people who use dollars on a daily basis must ensure that their dollars are not stolen through other means, such as irresponsible trustees of such assets or attackers gaining physical access to cash or financial information.

Similarly, no matter how good the Bitcoin protocol is at providing a secure transaction network, it is vulnerable to the same "old school" assaults that traditional assets are vulnerable to: scammers, irresponsible trustees, and physical access (in this case, to the private keys needed to sign away bitcoins). When interacting with others in Bitcoin, the reader should exercise the same prudence as when dealing with conventional cash.

"Won't mining pools eventually kill Bitcoin if they are a 'natural monopoly?'"

“Mining pools display ‘economies of scale,' meaning that when you double their size, the quantity of bitcoins they make more than doubles,” says one smart opponent to Bitcoin.

The business motive then pushes all the miners to form a massive mining pool, or at the very least have multiple large mining pools band together in a coordinated cartel. Satoshi Nakamoto's concept of thousands of autonomous miners autonomously contributing to the integrity of the blockchain becomes a joke with such processing power controlled by one or a few important individuals.

Bitcoin's own foundation will be destroyed by simple economic law. The cold logic of a monopolistic mining pool will demolish the dream of a trustless money and payment system."

This criticism seems especially credible at the time of writing, since the mining pool Ghosh has only pulled down from 50% of the

network's hashing capacity because to public outcry. The whole point of Bitcoin was that its users wouldn't have to rely on Gash or other institutions to do the right thing.

However, as the sector evolves, this particular concern will likely fade. Because it takes a certain amount of computational "overhead" to package a bundle of transactions and then broadcast it to the pool's miners to begin processing, there are currently (modest) economies of scale in mining pools, and there are also "administrative" tasks that must be handled—such as checking to see if the pool's miners have completed their work.

For the material in this part, we are grateful for useful talks with Paul Snow, however any inaccuracies remain the authors' responsibility, as we noted earlier in this guide. So, rather than joining a mining pool with only 10 other miners, a tiny miner (running a machine of low power) will most likely earn more by joining a mining pool with 100 other miners.

Even though the statement above is correct (as of this writing), it does not imply that the mining industry has a built-in desire to merge into one gigantic corporation. The logic of spreading out fixed overhead costs wears thin over time. Even if an individual miner may see a clear advantage in joining a pool of 100 miners rather than a pool of 10, he may not notice much of a difference in predicted earnings if the decision is between a pool of 10,000 miners and a pool of 5,000 miners.

In any event, the expected solution rate per hash does not improve with scale; regardless of whether a miner works alone or with a huge pool, it takes the same amount of hashes (in theory) to find a solution. The premise is straightforward: If Amy has a small computer dedicated to mining and Bill has a more powerful machine that can execute twice as many calculations per second, we can anticipate Bill to earn twice as many bitcoins over the course of a year.

There is no natural tendency to agglomerate,

as economists term constant returns to scale. There is no computational reason for the total solutions produced by the group to rise when several miners link their separate (and weak) machines into one coordinated (and strong) pool. Indeed, because the mining pool involves a variety of people, some of whom may be untrustworthy, we might expect the total number of bitcoins earned by the group to be lower than if each machine worked alone, because the pool framework requires some of the hardware's computational power to be devoted to "overhead" administrative tasks.

Remember from earlier in the tutorial when we talked about mining pools that the underlying reason for joining one is that it "smooths out" the projected payoff for the tiny miner. A lone wolf miner may go months without receiving any bitcoins, depending on the strength of his equipment, before suddenly hitting pander. By joining a mining pool, an individual miner reduces his or her projected payment marginally (once fees are

taken into account), but the payout is far more dependable because the group revenues are allocated according to each member's proportionate contribution. 54

When comparing the present size of various mining pools, it's important to remember that Bitcoin is a very new industry that hasn't attracted significant computational power investment in comparison to other industries. Yet, as the cost of processing power falls and (as one may assume) the "market cap" of Bitcoin rises, we should expect to see continuous investment in mining, resulting in today's powerhouses (such as GHash) growing in absolute size but shrinking relative to the network itself. Ultimately, competition will keep GHash and other prospective "major players" in check, rather than promises and the honor code.

An analogy may be useful: Consider a Midwestern city's outskirts. At early, there was little demand for Thai cuisine; only a few Thai immigrants would purchase such meals.

At first, only one restaurant is open. For a time, it was the only authentic Thai restaurant in town; because of its "scale economies," it had a "natural monopoly." After all, if the market will only support (say) 100 Thai meals per week, it makes sense to concentrate all of their production in one restaurant, given the fixed overhead costs of renting the building, purchasing the right ingredients, printing Thai menus, and finding cooks who can prepare authentic recipes, among other things.

However, as the suburb's population expands and its citizens become more cosmopolitan, there is a greater demand for Thai food. When it no longer makes sense to expand the operations of the first restaurant, a competitor starts a second.

Individual miners also benefit from joining a mining pool because the agreement effectively “locks in” the projected (bitcoin-denominated) return on mining at the present difficulty rate, hedging against a future when

their efforts are effectively useless (or, for that matter, against learning after years of mining that they had the configuration set up incorrectly). one that is unique Nobody would call it a "natural monopoly" down the road, when there are (say) a dozen Thai restaurants in town.

Mining pools in Bitcoin are expected to follow a similar path. Look, the Bitcoin community isn't stupid; they can see the dangers of a massive mining pool much more clearly than outside opponents. If the general public does not believe the ledger's validity and security, it restricts the market for bitcoin holders, lowering the potential value of a single bitcoin. Individual miners will thus have a financial incentive to leave huge mining pools and join smaller ones, in addition to their ideological commitment. Such a step should have not only long-term financial benefits (by fostering public trust), but should also carry at most a minor short--term decrease in predicted revenues for the individual miner, especially as the industry

matures.

Before we move on from this part, we should define what "corruption" means in the Bitcoin realm. Right present, victims have an uphill battle if the folks controlling (say) PayPal or a commercial bank just lie and take money from lawful owners and transfer it to themselves. They'd have to go to other third parties (like the Better Business Bureau or state agencies) and demand that the shady business be investigated. The procedure could take a long time, and the corrupt bank officials may be able to conceal their actions if they are cunning enough.

In contrast, if (say) the folks controlling GHash wanted to go rogue and double-spend bitcoins for personal gain, the rest of the network would swiftly catch on—the entire globe would be on to their scheme within hours. And the charges wouldn't be based on a hunch; it would be easy to prove what the rogue mining pool ringleaders had done, because their signatures would be on both

sides of the double-spend, broadcast at the same time, and originating from the network's farthest nodes (to maximize the payout).

They have a window of opportunity to get away with the products they have fraudulently purchased).

They might get away with a spending spree for a few hours, but then they'd be wrecked; individual miners who were unwillingly involved in the plot would abandon such a shady enterprise.

This last aspect is critical to grasping the somewhat fragile power of those in charge of a mining pool: Even though the leaders can assign jobs so that individual miners don't see the "big picture" (under existing methods), the mining pool can only command such strength if the individual miners continue to obey directions. In our hypothetical scenario, once individual miners realized they were assisting in the verification of double-spends —a realization that would happen quickly and be noticed by a growing number of

Bitcoin users56—these miners would leave the pool, because they don't benefit from assisting others in defrauding the community. The corrupt leaders would then have access to only their own hardware, which would be a drop in the bucket compared to the network's total processing capacity.

The wave of double-spends would stop as the individual miners exited the pool. What would be the long-term consequences of this terrible event? Beyond the losses suffered by those who were directly affected by the surge of double-spending, everyone else who owns bitcoins is likely to suffer as people try to sell their bitcoins now that the protocol's credibility has been seriously questioned. When all was said and done, everyone in the Bitcoin community would have learned something useful.

To use an analogy, imagine the editors of a prestigious mathematical journal publishing a faulty "proof" to benefit a friend. The whole

mathematical community would immediately agree that the conclusion was invalid, and the journal editors would be ruined if a single reader discovered the issue and raised the alarm.

After the initial wave of double-spends began, it's difficult to say how long it would take for a mining pool (made up of independently moral miners but run by an unscrupulous ringleader) to collapse.

It's important to note that this isn't just a technical question: even when a portion of the miners realized what was going on, others could be sleeping or watching a movie.

To avoid overstating things, we're claiming the originally dominant mining pool will collapse "within a few hours" due to practical concerns like these.

After such a thrashing, much like Mt. Gox, they'd learn their lesson and be much more wary of joining an already-dominant mining

pool.

To be clear, we do not expect the aforementioned to occur. On the contrary, we've discussed why we believe concerns about a "natural monopoly" in mining pools would fade over time as the market matures and its "lumpiness" is smoothed out.

The objective of the preceding story was to demonstrate that, even in the worst-case situation, the rogue mining pool would not be able to maintain control over the helpless victims indefinitely—the outlaw organization would be exposed as a gang of criminals and would be ousted from power within a few hours. Because of this, the management of huge mining pools may determine that, morals aside, it makes more sense to stick to the laws, as this would arguably be more profitable in the long run. 58

In some ways, Bitcoin has already gone through cycles where previously dominant

mining technology have been superseded as more wealth has been spent in mining. People could mine using their regular PCs at first, but this became obsolete as consumers pressed high-end graphics cards into duty as miners, which were then overtaken by FPGA pools, and eventually ASICs (circuits designs specifically for Bitcoin).

We've responded in like since this criticism has been presented as a "economic" one, implying that regular market forces would kill Bitcoin from within. Outsiders who want to bring down the Bitcoin network might set up a "innocent" mining pool and then launch a large double-spending attack. (Agents of various States or traditional financial interests, for example, who are concerned about the promise of Bitcoin and other crypto-currencies, could be involved in such a scenario.) Our reaction to this type of worry is the same as we've stated in the paragraph above, however the fact that such a ploy would very certainly be unsuccessful in bitcoins would not prevent such rogues.

- Conclusion

We hope that this book has given you the foundation you need to understand Bitcoin from both an economic and a cryptographic standpoint. In conclusion, we hope you now have a thorough understanding of what Bitcoin is and how it operates.

Finally, we'd like to remind you of the three caveats we mentioned earlier. First and foremost, we do not promote Bitcoin as a financial investment. Naturally, our guide will assist readers in making more educated decisions, but we are not here to make any predictions about the market value of bitcoins in comparison to (say) state-issued currencies in the next years.

Second, while we've focused on Bitcoin as an example, there are many more crypto--currencies to consider. Much of the foundation we built for Bitcoin would apply to them (with small adjustments), but it's crucial to remember that Bitcoin itself could fade into obscurity if and when better

protocols are launched.

Finally, we strongly encourage readers to share this free information with anyone who might be interested. We just ask that Silas Barta and Robert P. Murphy be properly credited, and that distributors periodically check the website http://understandingbitcoin.us to ensure that they have the most recent version of the guide.